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Denial of a Forum to Indirect-Purchaser Victims of Price Fixing Conspiracies: A Legal and Economic Analysis of Illinois Brick

Edmund H. Mantell

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Denial of A Forum to Indirect-Purchaser Victims of Price Fixing Conspiracies: A Legal and Economic Analysis of *Illinois Brick*

Edmund H. Mantell*

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I. Introduction

In *Illinois Brick Co. v. Illinois*¹ the Supreme Court construed section 4² of the Clayton Act,³ which provides, in part:

That any person who shall be injured in his business or property by reason of anything forbidden in the antitrust laws may sue therefore . . . without respect to the amount in controversy, and shall recover threefold the damages by him sustained, and the cost of suit, including a reasonable attorney's fee.⁴

In doing so the court held that passing-on⁵ cannot be used offensively by a plaintiff to obtain standing to sue under that section. The *Illinois Brick* court based part of its decision on its earlier decision in *Hanover Shoe, Inc. v. United Shoe Machinery Corp.*,⁶ where it held that a defendant may not use passing-on to insulate itself from attack by a direct purchaser.⁷ This article will consider in detail the methodological objections cited by the Supreme Court as reasons for the *Illinois Brick* rule.⁸ *Illinois Brick's* decision was based, in part, on an unwillingness to establish a doctrine of treble damage recovery founded on an eco-

1. 431 U.S. 720, *reh'g denied*, 434 U.S. 881 (1977). For an economic analysis of *Illinois Brick* undertaken soon after the Supreme Court's decision, see Landes & Posner, *Should Indirect Purchasers Have Standing to Sue Under the Antitrust Laws? An Economic Analysis of the Rule of Illinois Brick*, 46 U. CHI. L. REV. 602 (1979) [hereinafter referred to as Landes & Posner].

2. 15 U.S.C. § 15 (1976 & Supp. IV 1980).

3. 15 U.S.C. §§ 12, 13, 14-21, 22-27 (1976). The Clayton Act was enacted in 1914, nearly twenty five years after the enactment of the Sherman Anti-Trust Act, 15 U.S.C. §§ 1-7 (1976). Whereas the Sherman Act generally proscribes unreasonable restraints of trade, the Clayton Act provides more specific antitrust legislation. See generally P. AREEDA & D. TURNER, II ANTITRUST LAW §§ 303-304 (1978).

4. 15 U.S.C. § 15.

5. "Passing-on" occurs when a purchaser who has been forced to pay illegally high prices, passes the cost on to his customers. The United States Supreme Court rejected a passing-on defense in *Hanover Shoe, Inc. v. United Shoe Machinery Corp.*, 392 U.S. 481 (1968), where the defendant argued that the plaintiff was not injured by the defendant's alleged monopolistic acts since plaintiff passed the cost on to its customers. *Id.* at 494. In *Illinois Brick*, the Court was called upon to determine whether certain indirect purchasers could satisfy standing by advancing the passing-on theory to prove injury caused by the antitrust defendants. *Illinois Brick Co. v. Illinois*, 431 U.S. at 726.

6. 392 U.S. 481 (1968).

7. *Id.* at 494.

8. The Court stated "'sound laws of economics' can only heighten the awareness of the difficulties and uncertainties involved in determining how the relevant market variables would have behaved had there been no overcharge." *Illinois Brick Co. v. Illinois*, 431 U.S. at 743.

conomic theory the court regarded as dubious.

It is this article's thesis that the "simplifying assumptions of economic theory" regarded by the Court as implausible premises on which to base a treble damages recovery are readily understandable and capable of application to antitrust cases. Logic and common sense suggest that if the economic theory informing the measurement and apportionment of damages is brought into close conformity with perceived reality, the rationale supporting the holding in *Illinois Brick* will be seriously attenuated, perhaps to the point of nullification.

This article's review of the law will focus chiefly on *Illinois Brick* and its predecessor, *Hanover Shoe*, which determine the class of aggrieved persons permitted to litigate their claims under the antitrust laws. The legal doctrines of these seminal cases will be dissected, using economic theory to reveal their sometimes subtle and often unanticipated practical consequences. The result will reveal three subversions of the antitrust laws: First, the doctrine of standing fashioned by the Court in *Illinois Brick* denies compensatory damages to a large number of persons within the protection of section 4. Second, the denial of a forum to many persons "injured" within the meaning of section 4 dilutes the deterrent efficacy of the antitrust laws. Third, the practical implications of the *Illinois Brick* rule provide incentives for firms to engage in conspiratorial price fixing, if certain commonly occurring and easily identifiable market conditions prevail. Section II of this article discusses the requirement of standing, satisfaction of which is essential to the maintenance of a suit. The purpose behind such discussion is to evaluate the holding of *Illinois Brick* in terms of its effectiveness in promoting the apparent policies behind the antitrust laws. Section III elaborates on the passing-on doctrine which is used to limit the group of possible litigants. This article's position is that if the compensation objective of section 4 is to be furthered, all persons injured, wherever they may be situated in the distribution chain, should be able to threaten to sue based on an antitrust violation. This might result in deterrence of inchoate violations. The Supreme Court ruling, which prohibited the use of offensive passing-on, therefore actually impedes the ability of antitrust legislation to reach its goals. Section IV of this article contends,

contrary to the proposition set forth by Landes and Posner,⁹ that the *Illinois Brick* rule does result in harm to indirect purchasers. This section also shows that the "array of simplifying assumptions"¹⁰ which the Court finds so objectionable can be replaced by others embodying a more plausible representation of reality. The new premises generate a theory of the market adjustment mechanism rendering the task of measuring the apportionment of damages among indirect purchasers no more difficult than measuring damages sustained by direct purchasers in the usual antitrust lawsuit. Section V examines some possible consequences which might result from the *Illinois Brick* rule when applied to section I of the Sherman Act. The procedural devices protecting defendants from multiple liability are set out in section VI. The availability of these devices reduces the need for the *Illinois Brick* rule. Section VII sets forth a justification of the use of economic theory in the context of price fixing arrangements.

II. The Evolution of "Standing" Prior to *Illinois Brick*

To recover treble damages under section 4, a plaintiff must show that an antitrust violation was committed by the defendant which caused injury to plaintiff's business or property, reflected the anticompetitive effects of that violation, and resulted in measurable damages.

The Federal courts have developed and applied the doctrine of "Standing" as a device for determining whether a claimant shall be permitted to seek relief under section 4. In the following discussions I will undertake a brief review of the Standing doctrine in its several guises so that I may appraise the holding in *Illinois Brick* in terms of its efficacy in promoting the apparent purposes of the antitrust laws.

A. *The Requirement of Causality - "by reason of"*

The courts have imposed certain conditions which narrow the scope of section 4's available remedies despite the breadth of its language. One of these requires that the plaintiff show the

9. Landes & Posner, *supra* note 1.

10. *Illinois Brick Co. v. Illinois*, 431 U.S. at 741-42.

existence of a sufficiently close causal relationship between the act complained of and the injury claimed. The standing doctrine¹¹ embodies a policy concept of "proximate causation"¹² which is designed to confine the effect of defendant's conduct within reasonable limits, to avoid windfalls and double recovery, to prevent litigation from clogging the courts, and to avoid insurmountable evidentiary and proof problems. Thus, the courts have insisted upon "direct" as opposed to "indirect, remote, and consequential" harm to the plaintiff.¹³ As the Supreme Court stated in *Hawaii v. Standard Oil Co.*,¹⁴ "[t]he lower courts have been virtually unanimous in concluding that Congress did not intend the antitrust laws to provide a remedy in damages for all injuries that might conceivably be traced to an antitrust violation."¹⁵

Varied and conflicting standards for determining standing have been formulated by the courts. Many of these, however, are simply descriptive labels masking contradictory reasoning and results.

Some courts have devised the "direct injury" test by characterizing the nature of the plaintiff's relationship to a more immediately injured party.¹⁶ Other courts have adopted the "target area" test, that is, whether the plaintiff is within the area of the economy in which a breakdown of competitive conditions is endangered by the challenged conduct,¹⁷ or whether plaintiff "was not only hit, but was aimed at."¹⁸ Pursuant to this test, some

11. The review of the standing doctrine in this article is not intended to be historically comprehensive. This article seeks only to set forth the propositions and economic tests which are to be applied in cases brought under section 4 of the Sherman Act. For a thorough discussion of Antitrust standing, see Berger & Bernstein, *An Analytical Framework for Antitrust Standing*, 86 YALE L. J. 809 (1977).

12. See, e.g., *Karseal Corp. v. Richfield Oil Corp.* 221 F.2d 358, 363 (9th Cir. 1955).

13. *Loeb v. Eastman Kodak Co.*, 183 F.2d 704, 709 (3d Cir. 1910).

14. 405 U.S. 251 (1972).

15. *Id.* at 262-63 n. 14 (citations omitted).

16. See, e.g., *Bookout v. Schine Chain Theatres, Inc.*, 253 F.2d 292, 294 (2d Cir. 1958). The shareholder had no standing to sue for conspiracy to cut off the corporation's supply of films because "plaintiff's claim is only derivative from that injury and . . . he . . . must be content with the increase in value of his shares because of any recovery by the corporation." *Id.*

17. See, e.g., *Battle v. Liberty National Life Ins., Co.*, 493 F.2d 39 (5th Cir. 1974), cert. denied, 419 U.S. 1110 (1975).

18. *Karseal Corp. v. Richfield Oil Corp.* 221 F.2d at 365.

courts have required that plaintiff's injury be the foreseeable result of defendant's actions, while others have rejected the need for (or even the relevance of) any such showing.¹⁹ Still other courts have phrased standing in terms of whether the plaintiff is arguably within the "zone of interests" protected by the anti-trust laws,²⁰ or they have employed a functional analysis on a case-by-case basis.²¹ Under one standard or another, indirectly injured parties such as shareholders, employees, officers, creditors, franchisors, lessors and suppliers have, with certain exceptions, been denied standing to assert claims of competitive harm while allowing the immediately injured party to bring such claims.²² In addition, some courts also insisted upon privity between plaintiff and defendant.²³ Some courts, however, granted standing to final purchasers or ultimate consumers even when a price-fixed item was incorporated as a component in an entirely different product.²⁴ Still other courts held that standing for final purchasers was appropriate only where a price-fixed item was purchased in substantially the same form.²⁵

B. *The Requirement of "Injury" to "Business or Property"*

In the same year that *Illinois Brick* was decided the Supreme Court held in *Brunswick Corp. v. Pueblo Bowl-O-Mat*²⁶

19. Compare *Blackenship v. Hearst Corp.*, 519 F.2d 418 (9th Cir. 1975) (newspaper distributor had standing to sue newspaper publisher since his alleged injury was within the affected area of the economy which was the target of the anticompetitive conduct), with *Calderone Enter. Corp. v. United Artists Theatre Circuit, Inc.*, 454 F.2d 1292 (2d Cir. 1971), *cert. denied*, 406 U.S. 390 (1972) (landlord corporation of motion picture theatres denied standing to sue motion picture distributors since the corporation was not itself a target of the alleged anticompetitive conduct).

20. See, e.g., *Malamud v. Sinclair Oil Corp.*, 521 F.2d 1142 (6th Cir. 1975).

21. See, e.g., *Cromar Co. v. Nuclear Materials and Equip. Corp.*, 543 F.2d 501 (3d Cir. 1976).

22. See generally *P. Areeda supra* note 3, at §§ 334-42.

23. *E.g. City and County of Denver v. American Oil Co.*, 53 F.R.D. 620, 636-38 (D. Colo. 1971).

24. *E.g. Illinois v. Ampress Brick Co.*, 536 F.2d 1163 (7th Cir. 1976), *rev'd on other grounds sub nom. Illinois Brick Co. v. Illinois* 431 U.S. 720; *In re Western Liquid Asphalt Cases*, 487 F.2d 191 (9th Cir. 1973), *cert. denied*, 415 U.S. 919 (1974).

25. *E.g. In re Sugar Indus. Antitrust Litig.*, 73 F.R.D. 322 (E.D. Pa. 1976); *Philadelphia Hous. Auth. v. American Radiator and Standard Sanitary Corp.*, 50 F.R.D. 13 (E.D. Pa. 1970), *aff'd sub nom. Mangano v. American Radiator & Standard Sanitary Corp.*, 438 F.2d 1187 (3d Cir. 1971).

26. 429 U.S. 477, 489 (1977).

that it was insufficient for the competitors of allegedly illegally acquired companies to demonstrate injury only casually linked to the illegal acquisition. The Court stated:

Plaintiffs must prove *antitrust* injury, which is to say . . . injury of the type the antitrust laws were intended to . . . prevent and that flows from that which makes . . . defendants' acts unlawful. The injury should reflect the . . . anticompetitive effect either of the violation or of . . . anticompetitive acts made possible by the violation.²⁷

This language indicates that to acquire standing in a treble damage action a plaintiff must prove not only the nexus of causality between the act complained of and the injury suffered, but also that the injury is of the sort which constitutes an anticompetitive effect of the illegal acts.²⁸

The Court has provided little guidance in identifying a legally cognizable "anticompetitive effect." One approach suggested by this paper is to define a section 4 anticompetitive injury, as any consequence of illegal acts which economically disadvantages innocent persons in ways which would not have occurred but for the violation. This approach requires a plaintiff to prove an antitrust violation and a causal linkage as conditions precedent to a finding of "anticompetitive injury." Once both conditions are satisfied the plaintiff need only show that his economic well being has been adversely affected to meet the injury requirement. The *Brunswick* holding rejects this simple and direct approach in favor of a more opaque test based on the undefined notion of "anticompetitive effects." How these effects are to be identified in practical cases is far from clear. The guidelines suggested by the Court, "injury of the type the antitrust laws were intended to prevent,"²⁹ is merely a tautology in the guise of a criterion. The merit of the suggested approach is that it obviates a judicial inquiry into the esoterica of economic theory for the purpose of distinguishing "antitrust injury" from

27. *Id.* at 489 (emphasis in original).

28. See, e.g., *John Lenore & Co. v. Olympia Brewing Co.*, 550 F.2d 495 (9th Cir. 1977); *GAF Corp. v. Circle Floor Co.*, 463 F.2d 752 (2d Cir. 1972), *cert. dismissed*, 413 U.S. 901 (1973); *A.D.M. Corp. v. Sigma Instruments, Inc.*, 1980-1 Trade Cas. (CCH) ¶ 63,123 (D. Mass. 1980).

29. *Brunswick Corp. v. Pueblo Bowl-O-Mat, Inc.*, 429 U.S. at 489.

other injury which does not "reflect anticompetitive effects." From a strictly logical point of view, an attempt to identify causes of economic injury by the affixing of labels is simply an arbitrary exercise.

The theory of antitrust injury as urged in this article is grounded in the logical proposition that the economic process of "competition" must, by its nature, result in some firms suffering harm which benefits others. Vigorous competition among firms manifested in product quality, pricing policies, and technological innovations will result in some firms prospering and others declining. This is the natural result of functioning markets and should be allowed. Only if the declining firms can show that their decline is the reasonably proximate consequence of an antitrust violation should they be permitted to recover their damages from the violators.

The Supreme Court seems to have endorsed, at least implicitly, the proposition that an economic loss to a firm constitutes an "injury", although it has stopped short of characterizing all such injuries as antitrust injuries if they were brought about by antitrust violations.³⁰ Although the Court has approached the injury theory suggested by this article when interpreting the "business or property" language of section 4, it seems unwilling to recognize the conciliation between the injury theory and its construction of "business or property." As recently as 1979 the Court held that a consumer of goods or services for personal, rather than commercial, use whose money value was diminished by an antitrust violation, had a section 4 "property" injury.³¹ While the Court noted that "Congress plainly intended to exclude *some* category of injuries in choosing the phrase 'business or property', for section 4"³² personal injury claims, it rejected the contention that injury to a commercial interest was neces-

30. In *Hawaii v. Standard Oil Co.*, 405 U.S. 251 (1972), the Court ruled that injury to a state's general economy was not cognizable under section 4. The words "business or property" were construed to mean "commercial interests or enterprises." *Id.* at 264. See *Illinois Brick Co. v. Illinois*, 431 U.S. at 733 n.13.

31. *Reiter v. Sonotone Corp.*, 442 U.S. 330 (1979) (consumers of hearing aids, who were forced to pay excessive prices due to antitrust violations, sustained an injury within the "business or property" language of section 4).

32. *Id.* at 338 (emphasis in original).

sary,³³ and accorded the term "property" its ordinary and independent significance.³⁴ The Court added that "when a commercial enterprise suffers a loss of money it suffers an injury to its 'business' and its 'property'."³⁵ Thus, this statement recognizes that an economic loss to a firm constitutes an "injury" within the meaning of section 4. This recognition may be embodied logically in the doctrine that any pecuniary loss confers standing to recover, if it can be shown that the defendant's illegal acts caused the loss.

C. *Recovery of "damages . . . sustained"*

The measure of damages in private antitrust litigation must be contrasted with impact, or the fact of damage. The Supreme Court stated, in *Story Parchment Co. v. Paterson Parchment Paper Co.*,³⁶ that the jury verdict must reflect the damages proved:

It is true that there was uncertainty as to the extent of the damage, but there was none as to the fact of damage; and there is a clear distinction between the measure of proof necessary to establish the fact that petitioner had sustained some damage, and the measure of proof necessary to enable the jury to fix the amount. The rule which precludes the recovery of uncertain damages applies to such as are not the certain result of the wrong, not to those damages which are definitely attributable to the wrong and only uncertain in respect to their amount.³⁷

In a subsequent case, a lower court noted, regarding the fact of damage, "that the plaintiff is required to establish with reasonable probability the existence of some causal connection between defendant's wrongful act and some loss of anticipated reve-

33. While the court has dispensed with the need to show an injury to "business" under section 4, the term "business or property" has been held to involve a commercial venture or enterprise, see *Broadcasters, Inc. v. Morristown Broadcasting Corp.*, 185 F. Supp. 641 (D.N.J. 1960), as well as an occupation or trade, e.g., *Daily v. Quality School Plan, Inc.*, 380 F.2d 484 (5th Cir. 1967). A plaintiff does not have to be actually engaged in an ongoing business, however, if he can demonstrate an intention and readiness to enter the business.

34. *Reiter v. Sonotone Corp.*, 442 U.S. at 339.

35. *Id.*

36. 282 U.S. 555 (1931).

37. *Id.* at 562.

nue.”³⁸ Regarding the measure of damages, however, the Supreme Court stated in *Bigelow v. RKO Radio Pictures, Inc.*,³⁹ that the plaintiff need not submit direct and positive proof and the trier of fact could make “a just and reasonable estimate of the damage based on relevant data”⁴⁰ In a later case, the Court supplemented the “just and reasonable” criterion established by *Bigelow*:

Trial and appellate courts alike must also observe the practical limits of the burden of proof which may be demanded of a treble-damage plaintiff who seeks recovery for injuries from a partial or total exclusion from a market; damage issues in these cases are rarely susceptible to the kind of concrete, detailed proof of injury which is available in other contexts. The Court has repeatedly held that in the absence of more precise proof, the factfinder may ‘conclude as a matter of just and reasonable inference from the proof of defendants’ wrongful acts and their tendency to injure plaintiffs’ business, and from the evidence of the decline in prices, profits and values, not shown to be attributable to other causes, that defendants’ wrongful acts had caused damage to the plaintiffs.’⁴¹

There are alternative definitions and measurements for recoverable damages in cases brought under section 4 of the Clayton Act. In a conspiracy or monopolization case, plaintiffs may prove their damages by establishing the amount of an illegal overcharge, without having to ascertain the effect on their profits.⁴² Proof of the pre- and post-conspiracy price will usually be sufficient to demonstrate the price that otherwise would have prevailed in a competitive market.⁴³ Thus, “in a price fixing case, impact and damages are coextensive; the overcharge constitutes the plaintiff’s injury (impact) as well as the measure of his damage (damages)”⁴⁴ Besides recovering the overcharge,

38. *Flintkote Co. v. Lysfjord*, 246 F.2d 368, 392 (9th Cir.), *cert. denied*, 355 U.S. 835 (1957).

39. 327 U.S. 251 (1946).

40. *Id.* at 264.

41. *Zenith Radio Corp. v. Hazeltine Research, Inc.*, 395 U.S. 100, 123-24 (1969) (citations omitted) (quoting *Bigelow v. RKO Radio Pictures, Inc.*, 327 U.S. at 264).

42. *Hanover Shoe, Inc. v. United States Machinery Corp.*, 392 U.S. at 488-89.

43. *Chattanooga Foundry & Pipe Works v. City of Atlanta*, 203 U.S. 390 (1906).

44. *Ohio Valley Electric Corp. v. General Electric Co.*, 244 F. Supp. 914, 933 (S.D.N.Y. 1965).

plaintiff may also recover "any lost profits resulting from increased costs."⁴⁵ When seeking to recover lost profits, plaintiff must estimate what the profits would have been absent the wrong. For this purpose, a before and after showing of plaintiff's or a competitor's net profits may suffice where, for example, defendants unlawfully refused to deal with plaintiff.⁴⁶ Plaintiff may also establish lost profits as damages on the basis of the estimated market share that he would have enjoyed in the absence of the violation.⁴⁷ Alternative measures of recovery are plaintiff's out-of-pocket expenses,⁴⁸ or the depreciation in the valuation of his capital.⁴⁹

This brief recital of the alternative definitions and measurement of recoverable damages should suffice to demonstrate that the courts cannot avoid coming to grips with esoteric techniques of economic and statistical analysis for the purpose of ascertaining the answers to "what if" sorts of questions; e.g., if prices had not been fixed, what would plaintiff's profits have been? If defendants had not conspired in a refusal to deal with plaintiff, what would have been the latter's market share? And so on. These questions and others of like nature which invariably arise in treble damages actions compel the courts to admit into evidence and rule on the probative value of what has been pejoratively characterized by the Supreme Court as "an economist's hypothetical model." In short, if a treble damages plaintiff is successful in establishing liability then the triers of fact perforce entertain "an economist's hypothetical model" in deliberating on the "what if" question.

I will consider in detail the methodological objections cited by the Supreme Court as reasons for the rule of *Illinois Brick*. I will show that the very same issues and difficulties which the Court cited arise in the context of a direct-purchaser treble damages suit. The ineluctable conclusion is that the "sound laws

45. *In re Western Liquid Asphalt Cases*, 487 F.2d at 201.

46. *Bigelow v. RKO Radio Pictures, Inc.*, 327 U.S. at 262-63; see *Eastman Kodak Co. v. Southern Photo Materials Co.*, 273 U.S. 359, 376-79 (1927).

47. *Zenith Radio Corp. v. Hazeltine*, 395 U.S. at 118-19.

48. *Flintkote Co. v. Lysfjord*, 246 F.2d at 390-91.

49. *Story Parchment Co. v. Paterson Parchment Paper Co.*, 282 U.S. at 561-62. For a general discussion of the scope and assessment of recoverable damages see Annot., 16 A.L.R. Fed. 14 (1973).

of economics" which the Court claims "can only heighten the awareness of the difficulties and uncertainties involved in determining how the relevant market variables would have behaved had there been no overcharge" render the rationale of *Illinois Brick* nugatory.

III. The Evolution of Passing-On

A. *The Judicial Doctrines*

The concept of "passing-on" is closely related to, but distinct from, the standing and injury doctrines applicable to anti-trust actions. For example, in defense to a treble damage action, a defendant manufacturer may argue that plaintiff wholesaler passed on the illegal overcharge to his customers by increasing his prices in the amount of the overcharge and thus the plaintiff suffered no section 4 injury. Conversely, those ultimate consumers may assert passing-on offensively against the manufacturer on the theory that they paid the manufacturer's illegal overcharge and were thereby injured. These complex issues were addressed by the Supreme Court in the *Illinois Brick* and *Hanover Shoe* decisions.

In *Hanover Shoe*, a manufacturer of shoes brought an action against a shoe machinery manufacturer and distributor charging that the latter's practice of leasing but refusing to sell its machinery constituted monopolization. The manufacturer contended that the purchaser was not injured because the illegal overcharge was reflected in the price of plaintiff's shoes; even if it had bought machines at lower prices, plaintiff would have made the same profit as it made by leasing because it would have charged less for its shoes. The Supreme Court rejected this passing-on defense, holding that a *prima facie* case of injury under section 4 is established once a buyer shows the existence and amount of an illegal overcharge.⁵⁰ The Court also rejected

50. The Court stated:

If in the face of the overcharge the buyer does nothing and absorbs the loss, he is entitled to treble damages. This much seems conceded. The reason is that he has paid more than he should and his property has been illegally diminished, for had the price paid been lower, his profits would have been higher. It is also clear that if the buyer, responding to the illegal price, maintains his own price but takes steps to increase his volume or to decrease other costs, his right to damages is not

the argument that this rule should not apply where, for example, the demand for the buyer's product is so inelastic that he and his competitors could increase their prices accordingly without losing sales.⁵¹ The Court continued by stating that indirect purchasers, such as ultimate consumers, have little incentive to sue because of the small damages recoverable, thereby reducing the overall effectiveness of treble damage actions.⁵²

The *Hanover Shoe* doctrine prohibits defensive passing-on, thus precluding a manufacturer from asserting passing-on as a defense to a suit by a direct purchaser: the mirror image of this doctrine is found in *Illinois Brick*.⁵³ This mirror image rule bars would-be plaintiffs from invoking passing-on to gain standing in treble damage actions brought under section 4.

In *Illinois Brick*, plaintiffs, state and local governmental entities, initiated an action alleging that the defendants, concrete block manufacturers, had fixed the price of blocks. Plaintiffs had purchased blocks from general contractors in the form of completed masonry structures. The general contractors in turn bought the blocks from masonry contractors who had purchased them from the manufacturers. Plaintiffs brought suit claiming that the illegal overcharges had been passed on to them through the intermediaries from whom they had purchased. The Court

destroyed. Though he may manage to maintain his profit level, he would have made more if his purchases from the defendant had cost him less. We hold that the buyer is equally entitled to damages if he raises the price for his own product. As long as the seller continues to charge the illegal price, he takes from the buyer more than the law allows. At whatever price the buyer sells, the price he pays the seller remains illegally high, and his profits would be greater were his costs lower. *Hanover Shoe, Inc. v. United States Machinery Corp.*, 392 U.S. at 489.

51. In this context the Court reasoned:

Even if it could be shown that the buyer raised his price in response to, and in the amount of, the overcharge and that his margin of profit and total sales had not thereafter declined, there would remain the nearly insuperable difficulty of demonstrating that the particular plaintiff could not or would not have raised his prices absent the overcharge or maintained the higher price had the overcharge been discontinued. Since establishing the applicability of the passing-on defense would require a convincing showing of each of these virtually unascertainable figures, the task would normally prove insurmountable.

Id. at 493 (footnote omitted).

52. *Id.* at 494.

53. *Illinois Brick Co. v. Illinois*, 431 U.S. at 728. The characterization of *Illinois Brick* as the "mirror image" of *Hanover Shoe* is due to Landes & Posner, *supra* note 1, at 603.

did not address the standing issue, which the lower court decisions had focused upon, "except to note . . . that the question of which persons have been injured by an illegal overcharge for purposes of § 4 is analytically distinct from the question of which persons have sustained injuries too remote to give them standing to sue for damages under § 4."⁵⁴ By applying the converse of the *Hanover Shoe* rule, the Supreme Court held that only "the overcharged direct purchaser, and not others in the chain of manufacture or distribution, is the party 'injured in his business or property' within the meaning of Section 4."⁵⁵ The Court, which noted the complexities involved in analyzing which portion of the overcharge was actually passed on and diminished the incentive of direct purchasers to sue, reasoned that any other rule would create a serious risk of multiple liability for defendants as well as limiting the effectiveness of the antitrust laws.⁵⁶ According to the Court, even in the unlikely event that all potential claimants could or would be joined in a litigation, the use of passing-on theories would result in massive efforts to apportion recovery among conflicting claims of plaintiffs at different levels of distribution. The Court noted the limited utility of economics in this context:

Under an array of simplifying assumptions, economic theory provides a precise formula for calculating how the overcharge is distributed between the overcharged party (passer) and its customers (passees). If the market for the passer's product is perfectly competitive; if the overcharge is imposed equally on all of the passer's competitors; and if the passer maximizes its profits, then the ratio of the shares of the overcharge borne by passee and passer will equal the ratio of the elasticities of supply and demand in the market for the passer's product. Even if these assumptions are accepted, there remains a serious problem of measuring the relevant elasticities—the percentage change in the quantities of the passer's product demanded and supplied in response to a one percent change in price. In view of the difficulties that have been encountered, even in informal adversary proceedings, with the statistical techniques used to estimate these concepts, . . . it is unrealistic to think that elasticity studies intro-

54. *Illinois Brick Co. v. Illinois*, 431 U.S. at 728 n. 7.

55. *Id.* at 729.

56. *Id.* at 732-33.

duced by expert witnesses will resolve the pass-on issue.⁵⁷

The "array of simplifying assumptions" was invoked by the Court as the chief reason for denying plaintiffs the opportunity to establish their claim by means of offensive passing-on. Indeed, the Court went so far as to deny to all similarly situated indirect purchasers the opportunity to litigate an otherwise meritorious claim against conspiratorial price fixers. The Court further reasoned that the use of passing-on would entail the nearly insurmountable difficulties of tracing the effects of the overcharge on the prices, costs, sales and profits of the purchaser and proving that they would have behaved differently without the overcharge.⁵⁸ While conceding that these complexities will be less substantial in some contexts than in others, such as where a middleman resells goods without altering them or where a price-fixed good is a small part of a larger product, the Court refused to carve out exceptions for particular types of markets.⁵⁹ Finally, the Court noted its concern for the reduction in effectiveness of treble damage cases if they were brought by indirect purchasers with a smaller stake in the outcome than direct purchasers suing for the full amount of the overcharge.⁶⁰

57. *Id.* at 741-42 (emphasis in original) (citation and footnotes omitted).

58. *Id.*

59. *Id.* at 743-44. The Court noted that:

This Court in *Hanover Shoe* indicated the narrow scope it intended for any exception to its rule barring pass-on defenses by citing, as the only example of a situation where the defense might be permitted, a pre-existing cost-plus contract. In such a situation, the purchaser is insulated from any decrease in its sales as a result of attempting to pass on the overcharge, because its customer is committed to buying a fixed quantity regardless of price. The effect of the overcharge is essentially determined in advance, without reference to the interaction of supply and demand that complicates the determination in the general case.

Id. at 736. Further, the Court added: "Another situation in which market forces have been superceded and the pass-on defense might be permitted is where the direct purchaser is owned or controlled by its customer." *Id.*

60. Since *Illinois Brick* was decided in 1977, the courts have had occasion to rule on a variety of claims entailing application of the *Illinois Brick* rule and its express exceptions: cost plus contracts and ownership or control of direct purchaser by its customer. The types of claims subject to the *Illinois Brick* rule are exemplified by the following: *Stotter & Co. v. Amstar Corp.* (*In re Sugar Industry Antitrust Litigation*), 579 F.2d 13 (3d Cir. 1979); *Pony Creek Cattle Co. v. A. & P.* (*In re Beef Industry Antitrust Litigation*), 600 F.2d 1148 (5th Cir. 1979), *cert. denied*, 449 U.S. 905 (1980); *Mid-West Paper Prod. Co. v. The Continental Group, Inc.*, 596 F.2d 573 (3d Cir. 1979); *Phillips v. Crown Cent. Petroleum Corp.*, 602 F.2d 616 (4th Cir. 1979), *cert. denied*, 444 U.S. 1074 (1980);

It is the contention of this paper that "simplifying assumptions of economic theory," regarded by the Court as implausible premises on which to base a treble damages recovery, are unnecessarily simplistic. The Supreme Court decided as it did in *Illinois Brick*, (at least in part), because it was unwilling to establish a doctrine of treble damages recovery based on dubious economic theory. Logic as well as common sense suggests that if the economic theory informing the measurement and apportionment of damages is brought into close conformity with perceived reality, the rationale supporting the holding in *Illinois Brick* will be seriously attenuated perhaps to the point of nullification. In a subsequent section of this paper, we will show that the "array of simplifying assumptions" which the Court finds so objectionable can be replaced by others which embody a more plausible representation of reality. The new premises generate a theory of the market adjustment mechanism such as will render the task of measuring the apportioning damages among indirect purchasers of no more difficulty than that of measuring the damages sustained by direct purchasers in the usual antitrust lawsuit.

A by-product of the economic analysis, which is important in its own right, relates to the potential perversion of the antitrust laws produced by the holding of *Illinois Brick*. This perversion consists of the introduction of a new and subtle incentive for participants in oligopolistic markets to engage in price-fixing agreements. We will see that the same theory which reveals how damages are apportioned among all the victims of a price-fixing conspiracy can also be used to reveal the conditions under which price-fixing agreements may be effected with impunity.

B. Congressional Response to the Judicial Doctrines

The holding in *Illinois Brick* was motivated in part by the

Lefrak v. Arabian Amer. Oil Co., 1980-1 Trade Cas. (CCH) ¶ 77,723 (E.D.N.Y. 1980).

The "ownership or control" exception was adjudicated in several cases: *In re Sugar Industry Antitrust Litigation*, 579 F.2d 13; *In re Beef Industry Antitrust Litigation*, 600 F.2d 1148; *Mid-West Paper Prod. Co. v. The Continental Group, Inc.*, 596 F.2d 573; *Beckers v. Int'l Snowmobile Indus. Ass'n*, 581 F.2d 1308 (8th Cir. 1978), cert. denied, 440 U.S. 986 (1977); *In re Fertilizer Antitrust Litigation*, 1979-2 Trade Cas. (CCH) ¶ 79,172 (E.D. Wash. 1979); *In re Toilet Seat Antitrust Litigation*, 1977-2 Trade Cas. (CCH) ¶ 72,495 (E.D. Mich. 1977).

Court's construction of the legislative intent of the 1976 Anti-trust Improvements Act,⁶¹ and Congress' satisfaction with the Court's interpretation may be gauged by reviewing legislative activity in the aftermath of *Illinois Brick*. The inference which emerges from such a review is that there is widespread dissatisfaction in both houses with the Court's ruling which effectively closes the courthouse doors to all but direct customers of anti-trust violators.⁶² The Antitrust Enforcement Act of 1979, S. 300, was approved by a divided Senate Judiciary Committee.⁶³ This proposed legislation would overrule *Illinois Brick* by allowing recovery even if a plaintiff had not dealt directly with the defendant. The bill would also modify *Hanover Shoe* by permitting a defendant to assert passing-on either as a partial or complete defense, solely in order to avoid duplicative liability.⁶⁴ The Act is currently awaiting action by the full Senate.⁶⁵ Companion legislation was introduced in the House of Representatives where the Judiciary Committee held hearings, but no bill has been reported out of Committee.⁶⁶ These legislative responses to *Illinois Brick* and *Hanover Shoe* suggest that Congress is attempting to correct what it regards as an inaccurate reading of legislative intent by the Supreme Court.

IV. Economic Analysis of the Consequences of the Rule

61. Hart-Scott-Rodino Antitrust Improvements Act of 1976, 15 U.S.C. § 15(c). For the Court's interpretation of the relevant section of the Act and the legislative history bearing on the issue of offensive passing-on as presented in *Illinois Brick*, see 431 U.S. at 733 n. 14.

62. Legislation to overrule *Illinois Brick* and to modify *Hanover Shoe* was initially approved by the Senate and the House in 1978, but Congress adjourned before further action was taken. See S. Rep. No. 934, 95th Cong., 2d Sess. (1978); H. Rep. No. 1397, 95th Cong., 2d Sess. (1978). See generally, Calkins, *Illinois Brick and its Legislative Aftermath*, 47 ANTITRUST L.J. 967 (1978); Handler, *Antitrust-1978*, 78 COLUM. L. REV. 1363, 1424 (1978). See also, Note, *Treble Damages and the Indirect Purchaser Problem: Consideration for a Congressional Overturning of Illinois Brick*, 39 OHIO ST. L. J. 543 (1978).

63. See S. Rep. No. 239, 96th Cong., 1st Sess. (1979).

64. S. 300 would apply to any action pending on the date of enactment of the bill or which is commenced on or after that date, except for the provisions permitting a passing-on defense, which apply only to cases filed on or after the date of enactment.

65. See [Jan.-June] ANTITRUST & TRADE REG. REP. (BNA) 946 at A-11 (Jan. 10, 1980).

66. H.R. 2060, 96th Cong., 1st Sess. (1979).

Prescribing Offensive Passing-On

A. *Improper Denial of Compensation*

Situations may arise which factual patterns would result in a conflict of the dual objectives of private antitrust enforcement: compensation of victims of antitrust violations and deterrence of those violations.

When the two objectives have come into conflict, however, we believe that the achievement of the goals of the antitrust laws requires that deterrence be preferred. If most antitrust violations were deterred, the occasions for compensation would be few. The converse is not true: even if the victims of antitrust overcharges were fully reimbursed, the social inefficiencies of the violations would persist. Therefore, the rule of *Illinois Brick* is preferable if . . . it better deters antitrust violations than the alternative rule even though it denies full compensation to some persons harmed by the violations.⁶⁷

This argument appears eminently reasonable, until one considers the fundamental unfairness and arguable illegality of denying compensation to "some persons harmed by the violations." Surely this is a suprisingly disdainful attitude in view of the language of section 4 which express purpose is to compensate "*any person* who shall be injured . . ." ⁶⁸ Further, this conclusory proposition distorts the practical consequences of the *Illinois Brick* rule in a way which suggests that the denials of compensation will be few and those few will be of little quantita-

67. Landes & Posner *supra* note 1, at 605.

68. 15 U.S.C. § 15 (emphasis added). The conclusory proposition distorts the practical consequences of the *Illinois Brick* rule in a way which suggests that denials of compensation will be few and those few will be of little qualitative significance. The argument concedes that the *Illinois Brick* rule "denies full compensation to some persons harmed . . ." This characterization of the rule implies that "some" persons will receive a quantum of compensation which is less than "full." In actual fact, a strict application of the rule entails a denial of any compensation to the entire class of persons who are injured by an antitrust violation unless those persons enjoy the privileged status of direct purchasers. The distribution chain of goods and services being what it is, there can be little doubt that the number of indirect purchasers from conspiratorial price fixers will almost certainly be many times larger than the number of direct purchasers. None of these indirect purchasers will receive any compensation under *Illinois Brick*, no matter how grave the injury. At the very least it seems misleading to characterize such a state of affairs as a denial of "full" compensation to "some" persons. Probably a more accurate characterization would be a denial of "all" compensation to "most" persons.

tive significance. The argument concedes that the *Illinois Brick* rule "denies full compensation to some persons harmed" This characterization of the rule implies that "some" persons (i.e. a small number) will receive a quantum of compensation which is less than "full." In fact, a strict application of the rule entails a denial of *any* compensation (however small) to the entire class of persons who are injured by an antitrust violation unless those persons enjoy the privileged status of direct purchasers. The distribution chain of goods and services, being what it is, there can be little doubt that the number of indirect purchasers from conspiratorial price fixers will almost certainly be many times larger than the number of direct purchasers. Every one of these indirect purchasers will receive zero compensation under *Illinois Brick*, no matter how grave the injury. At the very least it seems misleading to characterize such a state of affairs as a denial of "full" compensation to "some" persons. Probably a more accurate characterization would be a denial of "all" compensation to "most" persons.

Even ignoring the patent unfairness of the *Illinois Brick* rule and its blatant disregard for the compensatory objective of section 4, the argument purporting to justify the rule on the basis of its deterrent efficacy is logically defective. The first justification is indubitably true: "If most antitrust violations were deterred, the occasions for compensation would be few."⁶⁹ The proposition which follows, however, fails to recognize that the full reimbursement to the victim of antitrust overcharges is not exacted from some third party such as an insurer. In fact, reimbursement is governed by section 4 and compels the violator to disgorge treble the amount of pecuniary harm he inflicted on his victim. This statutory requirement has three implications which, when considered as a form of syllogism, are seen to simultaneously promote the dual objectives of section 4:

- (1) Enforcement of treble damage claims of *all* persons injured within the meaning of section 4 will produce the result that the violator must satisfy judgments against him in amounts exceeding his unlawful exactions.
- (2) By undertaking any rational benefit/cost calculation prior to committing an antitrust violation a potential violator will per-

69. Landes & Posner, *supra* note 1, at 605.

ceive that the *expected* costs to himself, in the form of treble damage awards incurred because of a price-fixing violation of section 4, exceed the expected benefits to himself, or the unlawful overcharge, flowing from the violation.

(3) The outcome of the rational benefit/cost calculation will indicate to the potential violator that his interests are better served by not violating the antitrust laws.

Thus, we have the result that if the compensation objective of section 4 is enforceable by all persons injured, wherever they may be situated in the distribution chain, the threat of damages resulting from that enforcement will ipso facto deter inchoate violations. This line of reasoning reconciles the supposed "conflict" between the two objectives of the antitrust laws adverted to by Landes and Posner. Moreover, to the extent that the likelihood of treble damage awards deters potential antitrust violators, the "social inefficiencies" generated by these violations will fail to materialize.

Two respected commentators, Landes and Posner, have produced an ingenious argument to support their contention that the *Illinois Brick* rule will not result in uncompensated harm to indirect purchasers:

An antitrust claim is equivalent to a valuable, though risky, asset that includes a zero recovery as one possible outcome. Under *Illinois Brick*, the entire antitrust claim, including the possible zero recovery outcome, is vested in the direct purchaser. Indirect purchasers are compensated for relinquishing their legal claims by being charged lower prices. The risk of antitrust litigation is borne by the direct purchaser, who may or may not realize a return on his legal claim, while indirect purchasers receive a certain benefit based on the anticipated value of the claim.⁷⁰

The authors fail to mention that the "risky asset", consisting of the antitrust claim, includes not only a "zero recovery as one possible outcome," but includes another possible outcome consisting of substantial losses representing attorneys' fees and other litigation costs which are not recoverable should the plaintiff fail to establish liability. Thus, the "riskiness" is really a double-edged sword entailing possible heavy losses as well as a

70. *Id.* at 606.

zero recovery or a treble damage award. In the face of this uncertainty, Landes and Posner impute to the management of the direct purchaser an implausible pricing policy: prudent and well informed managers of such purchasers will intentionally set the price to their customers at a level lower than that necessary to generate a satisfactory margin of sales revenue over costs. Landes and Posner argue that they are willing to suffer this immediate self-inflicted harm because of their expectation of a compensatory treble damage award, despite being aware that their firm might incur even greater losses in the form of unrecovered litigation costs should they lose the lawsuit. It is hard to imagine an actual board of directors of an actual corporation countenancing such speculative behavior.⁷¹ Elementary considerations of the time value of money suggest that a pricing policy of the kind described above is likely to be contraindicated strongly by net present value budgetary calculations. Even if the probability of a positive recovery is favorable, the management is still faced with the prospect of deliberately incurring near term losses, such as sub-optimal rates of return discounted at relatively low discount rates, in anticipation of a possible large cash award to be enjoyed in the indeterminate future and hence subject to relatively larger discounting. It is by no means obvious that these capital-budgeting type calculations will support the sort of pricing policy described by Landes and Posner. Indeed, if the firm's cost-of-capital is high,⁷² it will use a high discount rate resulting in net present value calculations unlikely

71. There is a persuasive argument that can be made that, if the managing directors of a corporation were to pass on to the corporation's customers an as yet unrealized antitrust award, they might subsequently be adjudged to have failed to discharge their statutorily prescribed duty of due care; for this failure they would be jointly and severally liable to the corporation for the benefit of its shareholders or creditors. *See, e.g., N.Y. BUS. CORP. LAW* §§ 717, 720 (McKinney 1963).

72. The cost of capital to a firm represents a minimal acceptable rate of return on an investment. *See, e.g., K.K. SEO & B. WINGER, MANAGERIAL ECONOMICS* 370 (1979). This is virtually a universal standard for choosing among new investment opportunities. "The cost of capital is the discount rate for the present value method for evaluating proposed investment projects." *Id. See, e.g., T. HAILSTONES & J. ROTHWELL, INTRODUCTION TO MANAGERIAL ECONOMICS* 397 (1979). As a general rule, high costs of capital are indicia of firms experiencing difficulty in attracting new debt or equity financing. To the extent that such firms are more likely than others to be direct-purchaser victims of price-fixing conspiracies, they will have concomitantly greater incentives to avoid the kind of price-reduction pass-along of a damages award.

supporting a pricing policy of suffer now and prosper later.

In short, considerations of prudent business criteria statutory prescriptions, and available empirical evidence, imply that when the direct-purchaser victims of a price-fixing conspiracy determine prices to their own customers, they are mindful of the practical advice offered by Bertrand Russell:

"Since, broadly speaking the distant consequences of actions are more uncertain than the immediate consequences, it is seldom justifiable to embark on any policy on the ground that, though harmful in the present it will be beneficial in the long run."⁷³

Landes and Posner have qualified their theory: "Of course some buyers (i.e. direct purchasers) may not anticipate, and thus take account of, possible antitrust recoveries in their purchasing decisions. To the extent that they do not, the force of the foregoing argument is lessened."⁷⁴ This article contends that even if buyers do anticipate an antitrust recovery, they are unlikely to reflect this anticipation in their own price setting policies.

In summary, the combination of generalized risk aversion common among businessmen⁷⁵ and the methodology of capital budgeting⁷⁶ work to reinforce each other to ensure that instances of the pricing policy posited by Landes and Posner will rarely occur. If that is true then, by their own concession,⁷⁷ that their argument is vitiated. One is left with the alternative and more

73. B. RUSSELL, *PHILOSOPHY AND POLITICS IN THE BASIC WRITINGS OF BERTRAND RUSSELL* 465 (Egner & Denonn eds. 1961).

74. Landes & Posner, *supra* note 1, at 607.

75. For evidence that businessmen typically are risk-avoiders, see Breit & Elzinga, *Antitrust Penalties and Attitudes Towards Risk: An Economic Analysis*, 86 HARV. L. REV. 693 704-06 (1973).

76. For evidence that the methodology of capital budgeting calculations would tend to discourage a pricing policy in which a firm passed on to its customers in the form of a lower price the pecuniary benefits it expected to derive by prosecuting a treble-damages claim against price-fixers, see Erickson, *The Profitability of Violating the Antitrust Laws: Dissolution and Treble Damages in Private Antitrust Litigation* 5 ANTITRUST L. & ECON. REV. 101, 104-109 (1962). Professor Erickson concluded that antitrust violators often profit by their wrong doing despite incurring treble damage liability, partly because of the failure of awards to reflect adequately the time value of money. In effect, the victims of a conspiracy are placed in the same position as one who is compelled to extend a "loan" to the price-fixers, the "interest" on which, in the form of a subsequently secured treble damages award, constitutes a grossly inadequate "return" on the loaned funds.

77. See Landes & Posner, *supra* note 1, at 607.

plausible conclusion that the price increases engineered by a price-fixing conspiracy are disseminated throughout the distribution chain.

B. *Deterrence Dilution*

The previous section of this article argued that a reversal of the *Illinois Brick* rule will compensate persons section 4 was designed to protect and, as a consequence of that extension of protection, its deterrence objective will be furthered. This section of the article will argue that the *Illinois Brick* rule barring the use of offensive passing-on dilutes the deterrent efficacy of the antitrust laws independently of its denial of compensation to many injured persons.

First, consider specifically what is meant by private prosecution of treble damage claims serving to deter antitrust violations. At the most general level of discourse, deterrence is concerned with influencing the choices of one group, consisting of potential antitrust violators, by forecasting the behavior of another group consisting of all persons likely to be injured by the violation. This involves adducing reasons for the first group to believe that the behavior of the second group will be determined by the first group's behavior.

There are several key elements which characterize effective deterrence. A threat must be credible to be effective; its credibility may depend on the costs and risks associated with fulfillment for the persons making the threat. A retaliatory threat, such as a threat to file a treble damages claim, is likely to be more credible if the means of carrying it out are placed in the hands of those whose resolution is the strongest. A self-evident proposition, frequently overlooked, is that the rationality of the person to be deterred is pertinent to the efficacy of a threat, and that excessively myopic potential violators, like lunatics and children, often cannot be controlled by threats.

These considerations, and others, are relevant to an analysis of the *Illinois Brick* rule because the majority opinion based this rule on this proposition: Allowing the use of offensive passing-on would reduce the overall deterrent efficacy of antitrust enforcement because the right to sue would be divided among more

parties thereby reducing each parties claim.⁷⁸ The court thought this would diminish the deterrent efficacy of the threat of private treble damage claims because the amounts recoverable by the claimants were too small to induce a vigorous prosecution of meritorious claims. The Court went on to state:

We are unwilling to carry the compensation . . . principle to its logical extreme by attempting to allocate . . . damages among all 'those within the defendant's chain of . . . distribution,' . . . especially because we . . . question the extent to which such an attempt would . . . make individual victims whole for actual injuries . . . suffered rather than simply depleting the overall . . . recovery in litigation over pass-on issues.⁷⁹

The Court regarded this possibility of "depleting the overall recovery" as one which would reduce the deterrent efficacy of private treble damage actions to an impermissible degree.⁸⁰

The Court's reasoning has been discussed *in extenso* because of the intention to dissect and test its validity through an application of modern tools of conflict and deterrence analysis and game theory. Prior to undertaking this analysis, however, several technical concepts must be defined. First, if the Supreme Court is correct in its supposition that "indirect purchasers would have only a tiny stake in a lawsuit and hence little incentive to sue," is it possible that a reversal of the *Illinois Brick* rule might promote deterrence, notwithstanding the small incentive of indirect purchasers to vindicate their newly conferred standing? The answer to this question is determined by the effect of the rule on the "rationality" of violators and victims.

Suppose the class of potential antitrust violators is defined as consisting of those firms each of which would *expect* to enjoy an increase in profits if they successfully effect a price-fixing conspiracy.⁸¹ This definition embodies the notion of expected

78. Quoting *Hanover Shoe*, the Court in *Illinois Brick* stated: "[U]nless direct purchasers were allowed to sue for the portion of the overcharge arguably passed on to indirect purchasers, antitrust violators 'would retain the fruits of their illegality' because indirect purchasers 'would have only a tiny stake in the lawsuit' and hence little incentive to sue." *Illinois Brick Co. v. Illinois*, 431 U.S. at 725-26 (quoting *Hanover Shoe, Inc. v. United States Machinery Corp.*, 392 U.S. at 494).

79. *Illinois Brick Co. v. Illinois*, 431 U.S. at 746-47 (citation omitted).

80. *Id.*

81. There are many conditions in particular markets which are conducive to collu-

profits as the focus of the firm's concern. The analysis method applied here examines the ways in which changes in firms' expected profits will augment or diminish the deterrent efficacy of the treble damage remedy under the *Illinois Brick* rule.⁸² The expectational calculus is the operational embodiment of the requirement of "rationality" alluded to in the discussion of the key elements of deterrence.⁸³

When the victim of a price-fixing conspiracy threatens to bring a lawsuit under section 4, the threat is only a communication of one person's incentives, designed to impress on another the automatic consequences of his act. There is a special wrinkle, however, in the case of an indirect purchaser. Assume, *arguendo*, that indirect purchasers are not barred from bringing suit.⁸⁴ Assume also that the Supreme Court is correct in supposing that the class of indirect purchasers is very numerous and, as a consequence, the treble damages recoverable by any individual plaintiff are very small. Assume, finally, that the facts of the previous assumptions are common knowledge to all potential antitrust violators as well as to their potential victims, wherever situated in the distribution chain. These three assumptions bring into stark clarity the distinctive feature of the threat which may be posed by indirect purchasers. The nature of this threat is that the threatener, the indirect purchaser, has no incentive to carry it out either before the violation, when there is no meritorious claim, or after the violation, when the treble damage recovery is small and the net effect on the plaintiff's financial resources may be negative.⁸⁵

sive behavior in price fixing. The analysis undertaken in this article is sufficiently general to encompass the panoply of structural and behavioral characteristics thereby obviating a recital of specific conditions presumed to prevail. For a thorough discussion of these conditions, *see, e.g.*, F. M. SCHERER, *CONDITIONS FACILITATING OLIGOPOLISTIC COORDINATION IN INDUSTRIAL PRICING* (1972).

82. The term "expected profits" is used to indicate that conspirators' actual profits, whatever they may be, must be adjusted to reflect the facts that the violation may be detected and, if detected, the violators may be held liable for a treble damages award. *See* R. POSNER, *ECONOMIC ANALYSIS OF LAW* 360 (1972).

83. *See infra* note 102 and accompanying text.

84. This may occur, for example, if Congress legislatively overrules *Illinois Brick*, or if the Supreme Court seizes the earliest opportunity to reverse itself.

85. Much of the following analysis consists of an adaptation of a general theory of deterrence eloquently and cogently expatiated in T. C. SCHELLING, *THE STRATEGY OF CONFLICT* *Passim* (1963).

There are rather subtle psychological dynamics at work here which result in some interesting propositions. First, the indirect purchaser does have an incentive to bind himself to fulfill the threat to sue, if he thinks that the threat may be successful, because the threat rather than its fulfillment gains the end. Second, fulfillment is not required if the threat succeeds. Third, and perhaps most important, the more certain the contingent fulfillment is, the less likely and the less necessary the actual fulfillment becomes.⁸⁶ This notion of contingent fulfillment constitutes the means by which we supply operational meaning to the potential violators' expected profits.

In order to apply the game theory analytical mechanism to the adversarial relationship existing between the group of potential violators and their indirect-purchaser victims, we must build a model which accommodates the presumption that the damages recoverable by individual indirect purchaser/plaintiffs under section 4 are so small that their "threat" to sue may not be believed. The threat's efficacy depends on the credulity of the potential violators, and the threat will be ineffectual unless the indirect purchasers can convince the potential violators that there is reason to expect that the threat will be carried out.

The deterrent threat posed by indirect purchasers has some quantitative characteristics which give rise to the propositions discussed above. It is not necessary that the threat to sue should promise more damage to the party threatened than to the party carrying it out. In the case of an indirect purchaser suit, the non-recoverable costs of litigation may so far exceed the recoverable damages that even a successfully prosecuted claim will harm the plaintiff more than the defendant.⁸⁷ Indeed, this possi-

86. Professor Schelling makes the point that in ordinary language:

"threat" is often used also for the case in which one merely points out to an adversary, or reminds him, that one would take action painful to the adversary if the latter fails to comply, *it being clear that one would have an incentive to do so.*

Id.

Schelling suggests the use of the word "warning" rather than "threat" for these sorts of cases. In the case being considered here that of an indirect-purchaser who is the victim of a price fixing conspiracy, the concept of "threat" not "warning" is the appropriate model because, if the implicit "threat" of a treble damages claim does not deter the violation, the tiny or perhaps negative "recovery" expected by the indirect-purchaser/plaintiff would not constitute an incentive to fulfill the "threat."

87. The most significant of the indirect purchaser's non-recoverable litigation costs

bility was the basis of the Court's supposition that indirect purchasers would have little, if any, incentive to sue.

Deterrence power does not depend upon the size of the threat. A threat is only "too large" if its very size interferes with its credibility. The analytical lynchpin, then, is credibility. Under what circumstances would the group of potential violators forbear from price fixing because they expected or believed that the consequence of their price-fixing scheme would be one or more treble damage suits from indirect purchasers? The circumstances conducive to this expectation are revealed in the game theory paradigm.⁸⁸

The basic concept of game theory is that of the payoff matrix, of which the following description is typical:

A *game* is a situation in which we have a certain number of parties each of which is capable of assuming one out of a given number of positions or choices. The *outcome* or the *payoff* of the game is the set of rewards or penalties accruing to each party at each combination of positions of all the parties.⁸⁹

The payoff matrix representing the "game" to be "played" by potential violators and indirect purchasers is illustrated below:⁹⁰

are manifest as opportunity costs such as diversion of managerial attention and effort, possible disruptions of sources of supply, and missed opportunities to expand the firm's activities in new or established markets because the funds required to finance the expansion were diverted to underwrite the pending lawsuit. In addition, there may be large discretionary expenditures undertaken by the plaintiff in the form of expert witness fees, fees paid to consultants to conduct markets surveys, and costs of electronic data storage and retrieval; all or some of which the court may disallow as recoverable under section 4. This is especially likely to be the case if the discretionary expenditures do not lead to evidence admitted at the trial. And, of course, none of the litigation costs are recoverable should the indirect purchaser lose at trial. The risk of this latter contingency must be counted as a cost. Finally, there is the time value of all litigation expenses which is usually not awarded as costs.

88. The game-theory approach and the accompanying analytical paradigm are adaptations of the work of T. Schelling, *supra* note 85, at 178-182.

89. K. BOULDING, *CONFLICT & DEFENSE* 41 (1963).

90. This payoff matrix represents the choices available to the potential violators.

TABLE 1
Potential Violator's Choices

		Column 1	Column 2
		Do Not Fix Prices	Fix Prices
Indirect Purchaser's Choices	Do Not Sue Row 1	1 0	0 1
	Sue Row 2	0 0	-X -Y

In choosing a course of action, the potential violators choose a column and thereafter the ball is in the other party's court. After observing what the potential violators' choice has been, the indirect purchasers individually make their own choice. Each firm in the group of indirect purchasers may choose to forbear from bringing an action, or may file a treble damages claim. The values of the consequences to each party from each of the four pairs of choices are indicated in the corresponding column/row intersections. The consequence to the potential violators appears in the northeast corner of each box and the consequence to the indirect purchaser appears in the southwest corner.⁹¹ X and Y are positive numbers.

This game-theory paradigm has been adapted to represent the problem faced by the group of indirect purchasers in mounting a credible threat. If the potential violator foregoes any price-fixing scheme, the indirect purchaser's optimal choice is to forbear from filing a claim.⁹² If the potential violator does in fact

91. Since the analysis depends only on comparisons of the differences between absolute valuations of the payoffs for the two players separately, no generality is lost by adopting, for each participant, a scale of measurement that sets his most preferred payoff equal to 1 and his next preferred payoff equal to 0. That is to say, these are ordinal rankings of outcomes for each participant and need not represent dollar numbers. Nor need they be comparable between players. In the language of game theory we are here dealing with a non-constant sum game. For more on the interpretation of these numbers see A. A. Alchian, *The Meaning of Utility Measurement*, 43 Am. Econ. Rev. 26 (1953) or R. D. LUCE & H. RAIFFA, *GAMES AND DECISIONS* 12-38 (1967).

92. It must be assumed that if one or more indirect purchasers brings a treble damages action against innocent parties, such a proceeding would not impose substantial costs on defendants because the procedural means of accelerating judgments or a rapidly

engage in an effective price-fixing conspiracy, however, both the conspirator and the indirect-purchaser victim perceive that the optimal choice of the indirect purchaser remains a decision not to sue. If he does sue, the small treble damages recovered will be exceeded by the non-recoverable costs of litigation.⁹³ Consequently, he is in a worse position than if he had passively acquiesced. This hypothetical embodies the Supreme Court's supposition that each indirect purchaser anticipates such a tiny treble damage recovery that he will have little incentive to sue violators.⁹⁴

The distribution of payoffs within the cells of the payoff matrix is characterized by nomenclature peculiar to game theory. In the payoff matrix illustrated, we see that for any pair of choices which determines the set of payoffs, the gain or loss to one player is *not* necessarily equal to the loss or gain of the other player. This sort of game is known as a "variable sum game" meaning that "the variable sum game is one in which the sum of the payoffs in each box of the matrix is not constant."⁹⁵ In short, the variable sum game does not conform to the Duchess' Law, one of the asseverations of the Duchess in *Alice in Wonderland* - "The more there is of yours, the less there is of mine."

In a variable sum game, there is a curious amalgam of cooperation and conflict engendering some very significant policy implications of antitrust enforcement. There is opportunity for cooperation between the players because both of them will be better off within a certain range of solutions. But there are also

agreed upon settlement, will dispose of the claim without significant harm to defendants. Plaintiffs would have to bear, however, all the costs of bringing a claim dismissed on the merits, or one settled on terms disadvantageous to plaintiffs.

93. See *supra* note 82 and accompanying text.

94. The paradigm designed in this article exaggerates the Supreme Court's supposition. The game-theory format analyzes the strongest possible case which would support the Court's reasoning, namely, that in which the stake of indirect purchasers is not merely tiny but actually negative. If it can be shown that even under these extreme conditions the threat of lawsuits brought by indirect purchasers may constitute a significant deterrent to antitrust violations, then deterrence will be strengthened when indirect purchasers anticipate a tiny positive stake.

95. K. BOULDING, *supra* note 89, at 44.

For a lucid survey of the nature of variable-sum game theory and its applicability to the analysis of antitrust conspiracies see P. ASCH, *ECONOMIC THEORY AND THE ANTI-TRUST DILEMMA* 66-82 (1970).

loci of conflict because the distribution of total benefit between the two players depends on the particular solution adopted. Thus, while both parties are interested in establishing some solution, they have divergent interests regarding the particular solution adopted.

Applying these general propositions to the antitrust payoff matrix, it can be seen that the potential violators and their indirect purchasers have compatible incentives to avoid choices which are likely to result in mutually harmful payoffs, represented by the box in the lower right of the figure.⁹⁶ Given that one of the other three boxes will constitute a "solution", however, the interests of the two players in choosing among these solutions are inimical.

How is a "solution" arrived at? Further, is this solution in furtherance of antitrust enforcement? Specifically, what will a game-theoretic analysis reveal about deterrent efficacy under alternative rules governing the standing of indirect purchasers?

1. *Solutions under the Illinois Brick rule*

Under the *Illinois Brick* rule no elaborate analysis is required because the "solution", namely the choices of each player and the consequent payoffs, are preordained.

The *Illinois Brick* rule abrogates the indirect purchaser's power to choose a course of action, or to threaten to do so. Whichever choice the potential violators make, the indirect purchaser is barred from pursuing a legal remedy. Inasmuch as this constraint is known to the potential violators, they are free to choose a course of action which will yield the most preferred payoff of those available in the top row. Evidently, there is an incentive for the potential violators to engage in a price-fixing conspiracy which obtains the most preferred payoff.

This conclusory proposition does not imply that the judicial inhibitions imposed on indirect purchasers under the *Illinois Brick* rule will always provoke a price-fixing conspiracy when there is economic incentive to do so. Presumably the direct purchasers, to the extent that they are actually harmed by a price-fixing conspiracy, can be expected to seek compensation through

96. See payoff matrix, *supra* text accompanying note 90.

treble damage actions. *Illinois Brick* did not impair the abilities of direct purchasers to detect antitrust violations nor did it introduce any new procedural or substantive legal obstacles to the vindication of direct purchasers' rights. The game-theory analysis applied here to explore the deterrent implications of the *Illinois Brick* rule will not yield a definitive and unambiguous conclusion predicting the actual conduct of potential violators. Rather, the analysis will reveal how the presence or absence of a class of potential plaintiffs will affect the incentives perceived by potential violators.⁹⁷ In this sense, the payoffs in the game matrix may be interpreted as marginal contributions to deterrence which may tip the balance of the incentive structure one way or the other. This hypothetical implies that, assuming all other influences are equiponderant, the marginal effect of the *Illinois Brick* rule tends to weaken deterrent efficacy of the antitrust laws.

2. *Consequences of a reversal of the Illinois Brick rule*

If the Supreme Court or Congress reverses the *Illinois Brick* rule to confer standing on indirect purchasers, the scope of game-theory analysis is enlarged. The conditions of this game hypothetical allow two choices to each player, thereby introducing into the game considerations of rationality. Here, the notion of saliency must be considered as a determinant of conflict resolution in a variable-sum game.⁹⁸ The application of saliency entails a recognition that the enlarged scope of the game-theory

97. The conclusions in the text should be understood as reflecting marginal criteria for policy choices. The payoff matrix representing the variable sum game "played" by potential violators and indirect purchasers is predicated upon the solution to another game played by the potential violators and the direct purchasers. The potential violators' optimal strategy as determined by the solution of the latter game is implicitly subsumed in the payoff matrix of the indirect purchaser game. The particular payoffs to the potential violators in the indirect purchaser game represent incremental or marginal consequences which reflect whatever course of action may be chosen by direct purchasers. Expressed in formal game-theory terminology, one can calculate the payoff "solution" which potential violators can expect to realize in the direct purchaser game and then subtract those expected payoffs from the aggregate payoffs resulting from each combination of choices in the indirect purchaser game. Therefore, the payoffs in the matrix depicted in the text should be interpreted as marginal effects on the welfare of potential violators resulting from each combination of choices in the indirect purchaser game.

98. For illustrations of the principle of saliency at work in a variety of conflict situations see T. C. SCHELLING, *supra* note 85, at 54-67.

analysis affords opportunities for bargaining. The term 'bargaining' is used here in a special sense. An indirect purchaser relationship involves a scenario in which the parties will probably not engage in any sort of explicit communications of threats, warnings, or promises. Galienay's importance in contributing to the solution of this bargaining problem stems from the fact that these bargains are frequently struck with no communication between the bargainers; simply the tacit observation by both parties of some salient feature of the situation makes both parties settle on that salient feature.

In the case being analyzed, the salient feature which commands the attention of the potential violators is their expectation of treble damage claims. I have already alluded to the inability of individual indirect purchasers to convey a credible threat owing to the self-inflicted harm connected with the carrying out of the threat.⁹⁹ When dealing with a population of potential indirect-purchaser victims, however, the dual dimensions of a threat assume a statistical significance. As one author states:

The importance of a threat in the mind of the threatened, that is, the likelihood that it will make him change his behavior in the manner desired by the threatener, has two dimensions: one, the magnitude of the threat itself, that is, the prospective disutility to the threatened party if the threat is carried out, (i.e. -X) and the other, the subjective probability in the mind of the threatened party that the threat will, in fact, be carried out. We could presumably define these quantities so that the importance of the threat was equal to its magnitude multiplied by its subjective probability.¹⁰⁰

This is an operational definition of rationality which I will adapt to the particular characteristics of the payoff matrix confronting the group of potential violators. We impute to the potential violators the willingness and the capacity to calculate their expected payoffs arising from each of the two courses of action. These expected payoffs are calculated according to the formula prescribed for assessing the "importance" of a threat.¹⁰¹

99. See *supra* note 82 and accompanying text.

100. K. BOULDING, *supra* note 89, at 225.

101. The expression "expected payoff", sometimes "expected relative valued", is standard statistical terminology. The "expected relative value" of a strategy is simply a

The numerical magnitudes associated with each of the expected payoffs are the salient indicia of the conflict resolution mechanism. They are the potential violators' guides to an optimal strategy. If the potential violators conduct themselves rationally, they will pursue their own self-interest, and choose whichever course of action yields the most attractive expected payoff.¹⁰²

Two distinct possibilities present themselves when contemplating the calculations which potential violators will undertake. First, if the potential violators choose to effectuate a conspiracy, they will be sued by direct purchaser victims or by one of the antitrust enforcement agencies. The possibility of such lawsuits is a significant factor to be considered, regardless of whether the conspiracy provokes litigation by indirect purchasers. If the potential violators estimate the likelihood of a direct purchaser/enforcement agency lawsuit resulting in an adverse judgement, this estimate is symbolized by $1-P_1$. The symbol P_1 represents the potential violators' subjective probability that they may effect a price-fixing conspiracy with impunity.¹⁰³

The second possibility which potential violators must consider is that one or more indirect-purchaser victims may bring treble damages actions notwithstanding the disincentive re-

weighted sum of the relative values of the consequences, where the weights are the respective probabilities of the consequences occurring if the strategy is adopted and used by the decision maker. P. FISHBURN, *DECISION AND VALUE THEORY* 12 (1964). The measurement of the "importance" of a threat is simply an instance of employing different language to designate an expected payoff calculation.

102. The concept of rationality employed in this paper is consonant with modern theories of conflict resolution. For example, Schelling's description of the attributes of rationality: "What kind of rationality is required of the party to be deterred - a knowledge of his own value system, and ability to perceive alternatives and to calculate with probabilities . . ." T. C. SCHELLING, *supra* note 85, at 14. Indeed, this concept of rationality was endorsed more than half century ago by Frank Knight in his seminal work. He wrote: "It is correct to treat all instances of economic uncertainty as cases of choice between a small reward more confidently and a larger one less confidently anticipated." F. KNIGHT, *RISK, UNCERTAINTY AND PROFIT* 237 (1927). A practical method of institutionalizing the notion of "rationality," and in fact the one employed in this article, was designed specifically for a game-theory type of analysis. Its original statement can be found in J. VON NEUMANN & O. MORGENSTERN, *THEORY OF GAMES AND ECONOMIC BEHAVIOR* (1953). For a practical application of this methodology to pricing strategy see P.E. GREE, *APPLICATIONS OF DECISION THEORY IN PRICING STRATEGY IN PRICES: ISSUES IN THEORY, PRACTICE, AND PUBLIC POLICY* (A. Phillips & O. Williamson eds. 1967).

103. The probability P_1 consists of a number between zero and one which represents the potential violator's perception or his degree of belief. It may, but need not, be determined by sophisticated data analysis techniques.

vealed by the payoff matrix.¹⁰⁴ When contemplating the behavior of individual firms which are members of some larger population of more or less homogeneous firms, it must be recognized that all the members of that population will not behave with strict uniformity. Generally, there will be strong common tendencies, such as the tendency to avoid futile litigation. The laws of probability imply, however, that some individuals in a population will exhibit behavior varying from the "norm". If the number of indirect-purchaser victims is reasonably large it is almost a statistical certainty that some will file treble damages claims. This will happen despite the fact that from a purely pecuniary point of view it is ostensibly against their self interest to do so.¹⁰⁵

What is the practical import of such vague terms as "reasonably large" and "statistical uncertainty"? Let the symbol π represent the probability that an indirect purchaser will not file a treble damages claim against a price-fixing conspiracy. Further, assume that the population of all indirect purchasers who believe themselves to be adversely affected by the conspiracy consists of N firms. Lastly, assume that the probability of forbearing to sue is assumed to be the same for each of the N firms and that their litigation policies are independent of each other. These assumptions will allow us to impute practical meanings to vague statistical terminology such as "reasonably large" or a "statistical certainty".

These assumptions imply that the probability of at least one of the N indirect-purchaser victims will bring an action is calculated as $1 - \pi^n$. If the disincentive for indirect purchasers to sue is as strong as the Supreme Court supposes,¹⁰⁶ it is reasonable for Π to take on a value very close to 1, for example .99; in that

104. Payoff matrix, *supra* text accompanying note 90.

105. Although the empirical validity of this proposition depends on the workings of the laws of probability, one may perhaps adduce plausible explanations for its apparent counterintuitive flavor. It may be, for example, that a few indirect purchasers are more interested in punishing a wrongdoer than they are in husbanding their resources. Alternatively, it may be that most, but not all, of the indirect-purchaser victims perceive the true payoff matrix. Those few who do not may be mistakenly inflating the anticipated payoff to themselves if they should sue a group of price-fixing conspirators. Still another explanation may be that a Pyrrhic victory won today will obviate other such battles in the future.

106. *Illinois Brick Co. v. Illinois*, 431 U.S. at 741-42.

case the probability that an indirect purchaser will sue a price-fixer is one in a hundred. The table below shows how the probability of at least one indirect purchaser lawsuit changes as the size of the population of indirect purchasers changes.

Table 2
Number of Potential Indirect Purchaser Plaintiffs
5
10
25
100
500
Probability of at Least One Treble-Damage Action
.049
.095
.222
.633
.993

This table shows that even if each individual indirect purchaser is strongly disinclined to sue, when their number becomes "reasonably large", such as 100 firms, the probability that at least one of them will prosecute a treble damages action is nearly two thirds. Certainly this likelihood should be considered. For example, when the population of indirect-purchaser victims becomes very large, such as 500 or more firms, there is a probability of 99.3% that at least one lawsuit will be initiated.¹⁰⁷

107. Contrary to this position, an ingenious algebraic analysis was proposed by Landes & Posner, *supra* note 1, at 609-11, where the authors argue that indirect purchasers are unlikely to sue because their numerosity hinders detection of violators in the chain of distribution. This novel theory may have trouble convincing many courts, yet their algebraic result is noteworthy. They show that if there are n "links" in the distribu-

Suppose the symbol P_2 designates the probability of at least one treble damage action brought by indirect purchasers. At this stage in the analysis it is unnecessary to fix a particular numerical magnitude to P_2 . Its role is that of a parameter in determining the efficacy of indirect purchaser deterrence. The magnitude of P_2 represents the contingent fulfillment alluded to previously.¹⁰⁸

When potential violators decide to effect a price-fixing conspiracy, choosing column 2 of the payoff matrix, they face two possibilities. First, there is a probability, P_1 , that they will be held liable for treble damages based on claims brought by direct purchasers. Second, there is a probability, P_2 , of liability for treble damages on claims brought by indirect purchasers. The indirect purchasers will respond to a conspiracy by choosing row 2 with probability P_2 .¹⁰⁹ Alternatively, if the potential violators do not engage in a price fixing conspiracy, choosing column 1, they can be sure that none of their potential adversaries will secure a judgment against them. When determining the marginal deterrent effect on an indirect purchaser's incentive to sue, one must ask: for any predetermined value of P_1 , how large does P_2 have to be to make the threat effective if the magnitude of P_1 alone is not sufficiently large to ensure deterrence?¹¹⁰ This is a question of the potential violators' choice when confronted with the incremental risk P_2 . According to the payoff matrix,¹¹¹ if the potential violators choose column 1 they receive 0. If they choose column 2 their expectation is a weighted average of 1 and $-X$,

tion chain and two firms at each of the links, the total number of indirect purchasers is n^3 . See *id.* at 611 n. 24. If there are k firms at each link the number of indirect purchasers is $n \cdot \frac{nk}{2} - \frac{k}{2} + 1$. These formulas suggest that the population of indirect purchasers might be very large even in a chain with few links where there are as many as half a dozen firms at each link, meaning that the likelihood of at least one indirect purchaser treble damages action will usually be significant enough to cause potential violators to take it into account in planning their optimal strategy.

108. See *supra* note 86 and accompanying text.

109. Payoff matrix, *supra* text accompanying note 90.

110. If P_1 is large enough to constitute a completely effective deterrent, then the marginal contribution to deterrent efficacy of indirect purchaser threats must be zero. Such an extreme case is one of little practical importance in view of the 3,897 direct purchaser cases filed in district courts between 1969 and 1978. See Landes & Posner, *supra* note 1, at 633.

111. Payoff matrix, *supra* text accompanying note 90.

with weights of $(1-P_2)$ and P_2 respectively. If this average is less than 0, they are motivated to choose column 1, subject to the precondition P_1 that they will choose column 2 anyway because the anticipation of the likelihood of direct purchaser or enforcement agency lawsuits is too small to constitute an effective deterrent regardless of what the indirect purchasers decide to do. The condition for an effective threat is thus:

$$0 > (1-P_2) - P_2X$$

This can be rewritten as:

$$\text{Inequality (1)} \quad P_2 > \frac{1}{1+x}$$

We have assumed that any threat with P_2 above the floor established by the formula symbolized as *inequality (1)* above may still fail to deter with probability P_1 . Conversely, the conspirators will be deterred with probability $1-P_1$. If the indirect purchasers' threat succeeds, their payoff is $+1$. If it fails, their expectation is a weighted average of 0 and $-Y$, their weights being $(1-P_2)$ and P_2 respectively. Thus, the expected payoff to the indirect purchasers, when the threat is large enough to be effective is given by:

$$(1-P_1)1 + P_1[(1-P_2) \cdot 0 + P_2(-Y)] = 1-P_1 - P_1P_2Y$$

The right hand side of the equation above shows that the expected payoff to indirect purchasers becomes larger as P_2 diminishes. The indirect purchasers will anticipate the maximum feasible expected payoff, their most preferred expectation, when P_2 assumes the smallest numerical value which satisfies *inequality (1)*. A worthwhile threat must have an expected value greater than 0, which is what the indirect purchasers can expect from this particular payoff matrix under a strict application of the *Illinois Brick* rule. To have an expected value greater than 0, the numerical value of P_2 must satisfy the condition:

$$1 - P_1 - P_1P_2Y > 0$$

This can be rewritten as:

$$\text{Inequality (2)} \quad \frac{1-P_1}{P_1} \cdot \frac{1}{y} > P_2$$

Thus we see that *inequality (1)* and *inequality (2)* represent lower and upper bounds on the value of P_2 . These two inequalities determine the effective range of P_2 as:

$$\frac{1}{1+x} < P_2 < \frac{1-P_1}{P_1} \cdot \frac{1}{y}$$

If it should happen that there is no room between the lower bound and the upper bound, then the threat posed by indirect purchasers is nugatory. Symbolically, this condition translates as:

$$\text{Inequality (3)} \quad \frac{y}{1+x} \geq \frac{1-P_1}{P_1}$$

The frequency with which this condition is satisfied in real world markets is left to the reader's conjecture. It may be worthwhile observing, however, that the numerical magnitudes of P_1 and X are likely to be positively correlated which would tend to reduce the frequency of occurrence below what would be expected were the two independent of each other or negatively correlated.¹¹²

Examination of *inequality (2)* reveals that the contingent threat, or the probability of an action by indirect purchasers, will be effective if:

$$\text{Inequality (4)} \quad \frac{1-P_1}{P_1} < Y$$

Inequality (4) implies that if the harm suffered by indirect purchasers as a consequence of bringing their treble damage ac-

112. An instance in which indirect purchasers would not represent a significant threat is where $P_1 = 1/2$ and $Y = 1 + X$; the likelihood of deterrence by direct purchasers is 50% and the harm suffered by indirect purchasers consequent to bringing a "successful" treble damages action, where non-recoverable costs exceed aggregate damages recovered, exceeds the harm suffered by defendant conspirators as a consequence of their treble damages liability. Notice, however, that even if the respective harms to the parties satisfy this condition, there may still be ample opportunity for indirect purchases to constitute an efficacious threat if P_1 is small enough.

tion exceeds the odds that the direct purchasers will successfully deter, then the only kind of threat worthwhile for indirect purchasers to make is a contingent one.¹¹³

Although the game-theory analysis employs a somewhat austere model of the relations between potential antitrust violators and their indirect-purchaser victims, care has been taken to construct the payoff matrix to reflect the real-world economic incentives likely to be perceived by the participants when choosing their optimal strategies. However, the model does not purport to accurately predict the solution which would necessarily happen in a real-world situation. The objective of this analysis has been more modest: to reveal defects in the Court's reasoning in *Illinois Brick*. Specifically, one fundamental premise upon which the Court based its holding has been considered: that to permit indirect purchasers to pursue a treble damages remedy would weaken deterrence because the recovery available to direct purchasers would be diminished, thereby reducing their incentive to act as private enforcers and, more importantly, that the supposedly tiny damages recoverable by indirect purchasers would not constitute sufficient incentive to induce them to act as vigorous private enforcers.¹¹⁴

The purpose of the game-theory analysis is to test the validity of the Court's premise. The payoff matrix reflects the economic incentives which the Court hypothesized would diminish deterrence. The chief conclusion which emerges from this analysis is conditional: if the population of indirect purchaser victims is "reasonably large," and if the indirect purchasers are permitted to sue for damages, then a potential violator trying to maximize his expected benefits will perceive a marginal deterrent. Thus, the Court's premise is not necessarily consistent with the conduct of parties pursuing their self-interest in a rational or expectation maximizing way.

This game-theory analysis does not imply that a reversal of *Illinois Brick* will necessarily result in fewer price-fixing conspir-

113. Professor Schelling has addressed the problem posed in *Inequality* (4) and has reached the same result as this Article, although he uses different terms, such as "fractional threat" instead of "contingent threat." "Here is a case, then, in which the fractional threat is superior to the certainty threat, and in which the latter could not be worth making at all while the former were." T. C. SCHELLING, *supra* note 85, at 181.

114. See *supra* notes 78-80 and accompanying text.

acies. The analysis only indicates that under certain plausible and commonplace conditions the effectiveness of direct purchaser deterrence can be marginally augmented by indirect purchasers. The practical import of this conclusion is that, if indirect purchasers are permitted to invoke the doctrine of offensive passing-on, the number of price-fixing conspiracies can be expected to be less than what it would be were indirect purchasers barred from the courts.

C. *Measurement of Damages*

A third consequence of *Illinois Brick* concerns the conditions under which firms will find opportunities to engage in price-fixing conspiracies with relative immunity from antitrust sanctions. This section of the article will argue that the rule proscribing offensive passing-on may provide incentives for firms to enter into horizontal and vertical relations whose consequences for resource allocation and income distribution are indistinguishable from those of ordinary price-fixing conspiracies. *Illinois Brick* sets up such incentives because it permits transactions to be effected in such a way as to render them impervious to attack by those firms, or consumers, who will ultimately bear the burdens of monopolistic pricing and resource allocation.

The severest criticism to which the theory-of-the-firm has been subjected by the courts is that it creates a credibility gap between business as it is and as it is depicted by modern microeconomic theory and articulately expressed in *Illinois Brick*.

In *Illinois Brick* the Supreme Court critically commented on the "array of simplifying assumptions" invoked by economists to apportion recovery among claimants at different levels in the distribution chain.¹¹⁵ These simplifying assumptions are: the market for the passer's product is perfectly competitive; the overcharge is imposed equally on all competitors; and the passer maximized profits.¹¹⁶ These assumptions were deemed by the Court to be so at variance with perceived market reality as to render the measurement theory based on them practically use-

115. *Illinois Brick Co. v. Illinois*, 431 U.S. at 741-42.

116. *Id.*

less.¹¹⁷ It must be admitted that the Court's criticisms have merit.¹¹⁸ The Court was correct in rejecting the methodology for apportioning damages because it was based, in part, on the assumption that the market for the passer's product is perfectly competitive. The real world does not see many perfectly competitive industries or many genuine monopolists, and economists have been aware of this fact.¹¹⁹ The intermediate cases, those where the litigating parties are neither perfect competitors nor monopolists, are the ones usually before a court. The failure to deal adequately and convincingly with these intermediate cases has been interpreted to mean that microeconomic theory focuses on the detailed solution of problems for nonexistent firms.¹²⁰

Even with the defects exposed, economic theory still contains value. If courts are to consider actual price and production decisions and the resulting profits to the firms, the importance of applying microeconomic theory to these subjects should not be ignored. Despite long and vigorous debate on the theory and

117. In addition, the Court alluded to the "serious problem measuring the relevant elasticities" as a means of supplying operational content to the apportioning measurements. The elasticity issue, however, is one which can be raised in any private treble damage action in which a direct purchaser is required to prove the extent of his recoverable damages, such as lost profits. As a practical matter this means that the probative value of elasticity studies may be placed in issue regardless of whether indirect purchasers are permitted to invoke the doctrine of offensive passing-on. The evidentiary problems raised by statistical elasticity studies may or may not be "serious" ones, but there seems to be no logical reason for the courts to permit one class of injured persons, direct purchasers, to use them and to deny another class of injured persons, indirect purchasers, a forum because their use raises "serious problems." Such a distinction seems, at the least, to arbitrarily foreclose an opportunity to indirect purchasers afforded to direct purchasers.

118. The profit-maximization assumption, as well as the proffered substitutes, is the subject of a number of studies. For some good surveys of what the economics profession is complaining about and what is being done to rectify the complaints, see the following: Alchian, *The Basis of Some Recent Advances in the Theory of Management of the Firm*, 24 J. INDUS. ECON. 30 (1965); Nordquist, *The Breakup of the Maximization Principle*, 5 Q. REV. ECON. & BUS. 33 (1965); P. ASCH, *ECONOMIC THEORY AND THE ANTITRUST DILEMMA* (1970). But see Enke, *On Maximizing Profits: A Distinction Between Chamberlain and Robinson*, 41 AM. ECON. REV. 566 (1951); Hitch & McKean, *What Can Managerial Economics Contribute to Economic Theory?* 51 AM. ECON. REV. 147 (1961).

119. For admirable surveys of the development of economic thought on the nature of competition see Stigler, *Perfect Competition, Historically Contemplated*, 1957 J. OF POL. ECON. 1; J.M. CLARK, *COMPETITION AS A DYNAMIC PROCESS*, (1961); McNulty, *A Note on the History of Perfect Competition*, 1967 J. OF POL. ECON. 365; and, by the same author, *Economic Theory and the Meaning of Competition*, 1968 Q. J. OF ECON. 639.

120. See, e.g., P.W.S. ANDREWS, *ON COMPETITION IN ECONOMIC THEORY*, (1964).

its merits,¹²¹ the proponents of the theory have demonstrated that it possesses significant power to explain and predict the observable conduct of real-world firms. Furthermore, until such time as a theory is developed that is clearly a better predictor, or that indubitably provides a better explanation of economic behavior, we must use the tools at hand. It makes little sense to discard a theory which has demonstrated some merit in the absence of a demonstrably superior alternative.

Where courts are trying issues related to such nebulous phenomena as foreclosed profits, opportunity costs, and cross elasticities of demand, they should determine initially which aspects of microeconomic theory are applicable to the case at bar and should be retained, and which are so incompatible with the needs of real cases as to warrant immediate rejection. It is clear that the Supreme Court in *Illinois Brick* entertained serious doubts regarding the "array of simplifying assumptions". This article's analysis will reject those assumptions and replace them with others of a more general nature; then inferences can be derived regarding the measurement and apportionment of recoverable damages as between the passer and the passee.

The first step is to relax the assumption that the market for the passer's product is perfectly competitive. The conventional definition of a perfectly competitive market is, "a market in which the *individual* buyer or seller does not influence the price by his purchases or sales. Alternately stated, the elasticity of supply facing any buyer is infinite, and the elasticity of demand facing any seller is infinite."¹²²

This characterization of a perfectly competitive market implies that a firm which does not sell its goods in such a market

121. The debate has focused on whether managers equate *MR* and *MC* either consciously or subconsciously, whether managers have even heard of *MR* and *MC* and whether overt recognition of these concepts is a prerequisite to achieve their equation, and whether one should even be troubled about the whole affair. For a sampling of the most pertinent considerations, see the following: Oliver, *Marginal Theory and Business Behavior*, 38 AM. ECON. REV. 275 (1945); Hague, *Economic Theory and Business Behavior*, 26 REV. OF ECON. STUDIES 144 (1949); Early, *Marginal Policies of "Excellently Managed" Companies*, 46 AM. ECON. REV. 44 (1956); Horowitz, *The Advance of the Theory of the Firm: One Step Forward, One Step Back*, 7 Q. REV. OF ECON. & BUS. 53 (1967).

122. STIGLER, *THE THEORY OF PRICE* 87 (1966). For further elucidation see Schaefer, *Passing-On Theory in Antitrust Treble Damage Actions: An Economic and Legal Analysis*, 16 WM. & MARY L. REV. 887, 887 n. 22. (1975).

must face a demand curve which is downward sloping, or one that is of less than infinite elasticity. The simplest, most obvious consequence of this fact is that if the firm raises its price to its customers, it will experience a reduction in unit sales. The line indicated by *D* in Figure I¹²³ depicts such a demand curve.¹²⁴ This is the demand curve facing the direct purchaser or passer. The passer's customers are the passees.

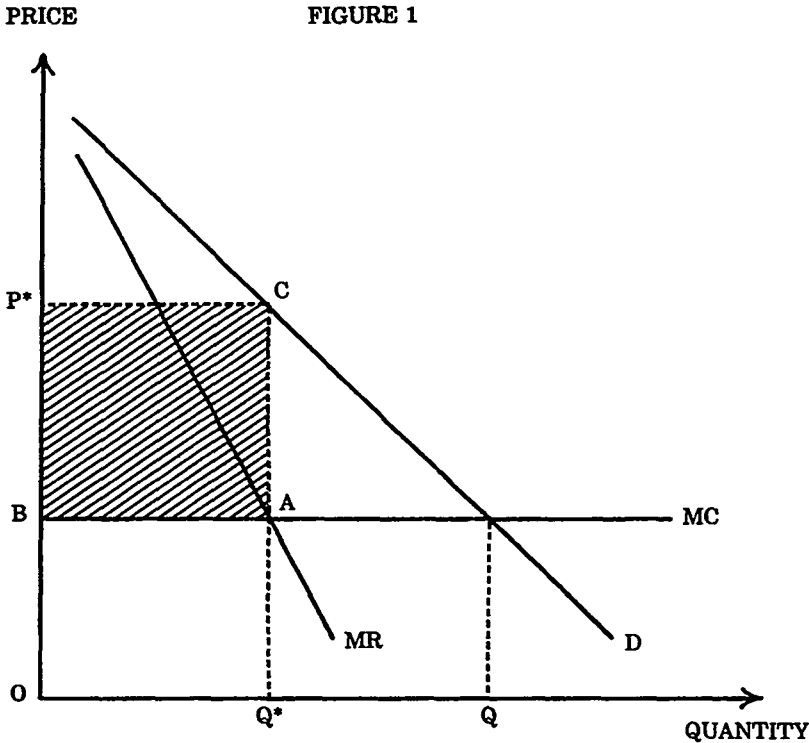
123. The horizontal line *MC* on the diagram represents the firm's marginal operating costs. It is defined as the addition to total costs which the firm incurs when producing one more unit of output during a particular time period. Since the *MC* curve is a horizontal straight line, the firm's unit costs are independent of the level of output, and average costs are equal to marginal cost.

The assumption that average costs are independent of the level of total output conforms reasonably well to actual production technology and factor pricing. This assumption has been frequently exploited by economists as a means of simplifying analyses without doing much violence to reality. See, e.g., Harberger, *Monopoly and Resource Allocation*, 44 AM. ECON. REV. 77 (1954). Consider also what Professor Dewey has to say on the subject:

From his earliest training, the economist has had drummed into his consciousness the image of the firm's average total cost. And it is U-shaped. . . In the real world, multi-plant firms need not have U-shaped cost curves. Only in the very shortest run does a firm expand output by making greater demands on its existing production capacity. Rather, it expands output by increasing productive capacity which usually means acquiring another plant; and there is no good a priori to suppose average total cost will increase when the additional plant is acquired. Since multiplant firms exist, economies of multiplant ownership must also exist.

D. Dewey, *The New Learning: One Man's View in Industrial Concentration: THE NEW LEARNING* 5 (Goldschmid, Mann & Weston ed. 1974). See D. DEWEY, *THE THEORY OF IMPERFECT COMPETITION* 42-59 (1969). In support of Dewey's contention, see K. LANCAS-TER, *INTRODUCTION TO MICROECONOMICS* 105-127 (1969). Moreover, a series of statistical studies have found that even in the short run the marginal cost is constant, which necessarily implies that average cost is constant until "capacity" is reached. See, e.g., J. JOHNSTON, *STATISTICAL COST ANALYSIS* (1960); K. COHEN & R. CYERT, *THEORY OF THE FIRM* 101-07 (1965). In any event, the assumption of average cost constancy is not a biased one. It is merely a simplification to facilitate analysis of passing-on conduct.

124. Figure 1 represents a less than perfectly competitive market.



The horizontal line on the diagram denoted by *MC* represents the firm's marginal operating costs. It is defined as the addition to total costs which the firm incurs when producing one more unit of output during a particular time period. In view of the fact that the *MC* curve is a horizontal straight line, the firm's unit costs are independent of the level of output and average costs equal marginal cost.

Because the downward sloping demand curve facing the passer signifies that he is not selling his wares in a perfectly competitive market, the passer can adjust his output to maximize his profits. The line *MR* represents the marginal revenue curve associated with the demand curve. If the passer was a profit maximizer, he could set his output at a level denoted by

Q^* . This is the output level at which the marginal cost of that output is exactly equal to the marginal revenue it brings in when it is sold. The equality occurs at point A. The demand curve informs the passer that his customers will purchase every unit of output Q^* at a unit price of P^* . The total profits generated by this pricing policy are represented geometrically by the rectangle ABP^*C .¹²⁵

A firm which is not an assiduous profit-maximizer might select some level of output other than Q^* . It may be greater or smaller than Q^* but unlikely to differ very greatly from the optimal level for any sustained period of time, absent some external constraint. The actual output of a passer who does not maximize profits will not exceed Q because to do so would entail actual operating losses. Henceforth the profit maximization assumption will be relaxed, and substituted for it will be the supposition that prior to the inception of the price-fixing conspiracy the direct purchaser's output was somewhere between O and Q , not necessarily Q^* .

Another "simplifying assumption" cited by the Supreme Court is that the overcharge is imposed equally on all of the passer's competitors.¹²⁶ Because this analysis attempts to reveal the extent to which an individual direct purchaser will pass on the overcharge to his customers, no resort is necessary to implausible generalizations regarding uniformity of overcharge incidence. An analysis which reveals the amount of the overcharge passed on will, ipso facto, permit courts to compute the distribution of the overcharge as between passer and passee once the amount of the overcharge passed on is revealed.

1. *No passing-on*

The next consideration is how a price-fixing conspiracy imposes an unlawful burden on direct purchasers in the first instance. The specific object of inquiry will be the economic manifestation of that burden. Once having identified the primary incidence of the burden, the mechanism by which it is shifted to indirect purchasers one link removed in the distribution chain

125. The area of profit rectangle is simply the algebraic difference between the rectangle representing total sales revenue (OP^*CQ) and total costs ($OBAQ^*$).

126. *Illinois Brick Co. v. Illinois*, 431 U.S. at 741.

will be examined. The shifting theory can be iterated as many times as there are links in the distribution chain whose firms play dual roles of passers/passees. Of course, if a firm sells only to ultimate consumers, those consumers must bear the residual burden. This burden may be so slight, however, as to be of minimal proportions. While determining the weight of that burden is an empirical question unamenable to theoretical resolution, a method of measuring it can be developed.

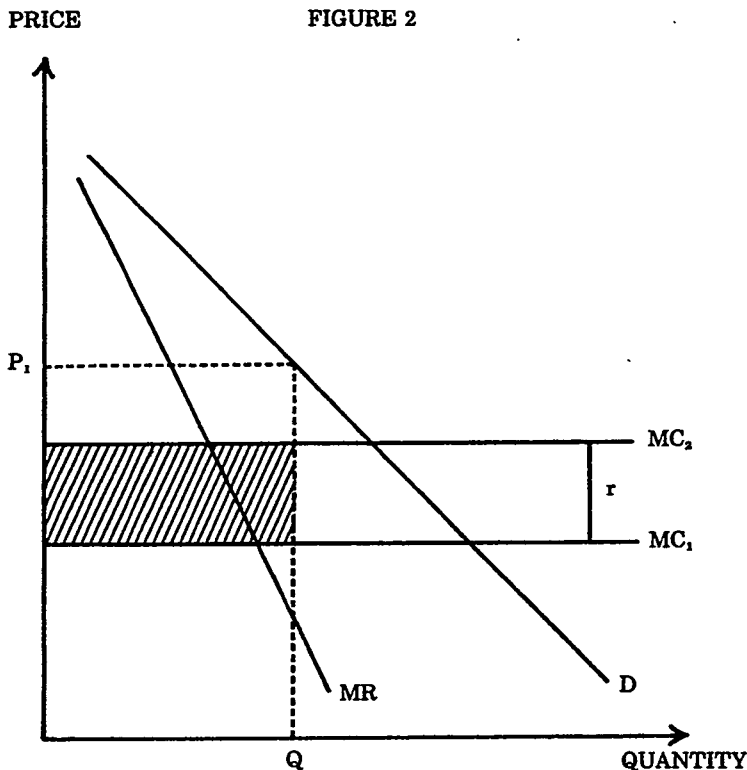
Initially, it must be recognized that a passer's output represents an input factor, one of several factors of production, to the passee. A conspiratorially effected price increase, or even an innocent price increase, in the conspirator's product is regarded by the direct purchaser as an increase in the price of one of his input factors he purchases. Obviously, if the direct purchaser is to maintain the same level of production after the conspirator's price increase takes effect, his total costs of doing business will increase. Thus, the initial manifestation of the antitrust violation is observed as an increase in the direct purchaser's marginal cost. Therefore, if the price of one input factor increases, the percentage change in the firm's marginal cost is equal to the product of the percentage change in the input factor's price and the percentage of the total marginal cost represented by the particular input factor whose price has changed.¹²⁷ If, for example, the price-fixing conspiracy imposes an unlawful overcharge of 20% on the price of the conspirator's product, the direct purchaser will perceive that the price of this input factor has increased by 20%. If that input factor represented 25% of marginal operating costs prior to the price increase, the unlawful overcharge will have the effect of raising the firm's marginal costs by 5%.¹²⁸

Expressing these relationships in symbols facilitates analysis of the incidence of price-fixing overcharges. Let f_1 represent the unit price of factor f paid by a direct purchaser to his supplier prior to the imposition of an unlawful overcharge. When the supplier conspires with others to fix the price of their prod-

127. For a proof of this proposition see, e.g., G. BECKER, *ECONOMIC THEORY* 142-143 (1971).

128. This result is reached as follows: $20\% \times 25\% = 5\%$. If measured by the Lerner Index, *infra* note 137, this would be: $L_1 = .20$.

uct the result is the new higher price f_2 . From the direct purchaser's point of view the percentage increase in the price he pays for this factor input is $f = (f_2 - f_1)/f_1$. If the factor input's share of marginal cost prior to the overcharge is symbolized by S_f ,¹²⁹ then the percentage increase in the direct purchaser's marginal cost function is calculated as $r_c = fS_f$. If the direct purchaser's pre-conspiracy marginal cost function is as depicted in Figure 1,¹³⁰ then the consequences of the price-fixing conspiracy will be to effect a parallel displacement of the MC curve by the amount r as depicted in Figure 2.¹³¹



129. Technically, the share of the factor's cost in the marginal cost of the firm is calculated as: $S_f = (f_1/MP_f)/MC$ where P_1 and MC are the pre-conspiracy price of the factor and the firm's marginal cost, respectively, and MP_f is the marginal product of the factor in question. See Becker, *supra* note 127.

130. Figure 1, *supra* at text accompanying note 124.

131. MC_2 represents the post-conspiracy marginal cost curve. Its relation to the preconspiracy marginal cost curve, MC_1 , is given by $MC_2 = (1 + r_c)MC_1$ where r_c is as defined above. The vertical distance between the two cost curves measures the amount by

If the direct purchaser does not alter his own production or sales policies in any way to accommodate the increase in his operating costs, he bears the entire economic burden of the overcharge and the issue of passing-on does not arise. The actual damages suffered by such a passive direct purchaser can be easily calculated as the profits which the conspirators transfer from the direct purchaser to themselves through the unlawful overcharge.

One may determine the magnitude of such an unlawful exaction geometrically. If the pre-conspiracy price charged by the direct purchaser to his customers is indicated by P_1 in Figure 2, and this price and the associated output are unchanged subsequent to the conspiratorially effected increase in marginal costs, the recoverable damages are represented by the difference between the direct purchaser's pre-conspiracy and post-conspiracy profits. This profit transfer is given by the area of the shaded rectangle in Figure 2. Its numerical magnitude is calculated as $(MC_2 - MC_1) Q = r_c MC_1 \cdot Q$.

2. Active Passing-On

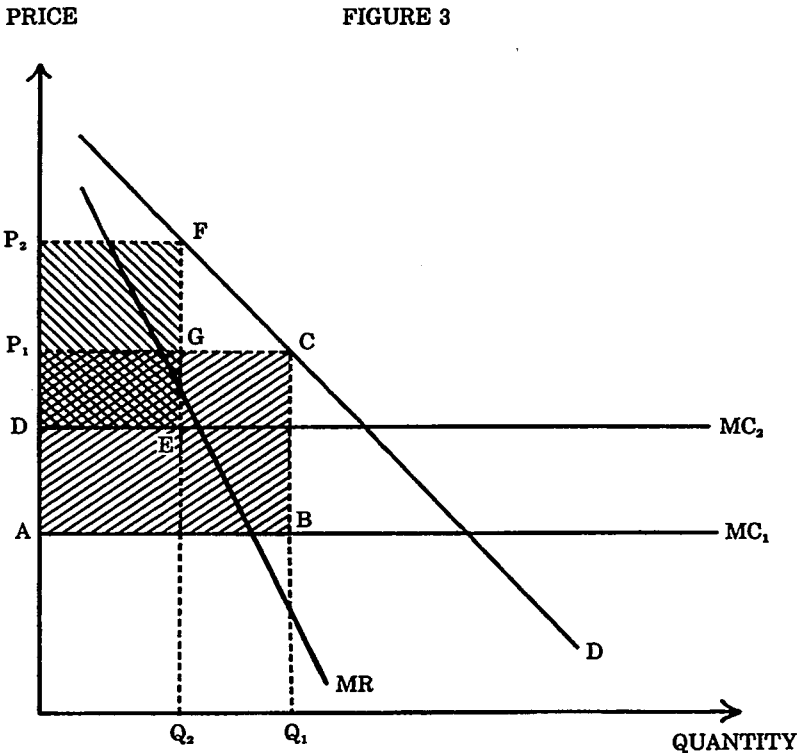
After the initial incidence of an unlawful overcharge has been established the passing-on issue can be introduced into the analysis. The issue arises when the assumption that the direct purchaser's response to an increase in his costs is one of supine resignation is abandoned. A shift in the direct purchaser's cost curve from MC_1 to MC_2 , as in Figure 2, will generally induce the direct purchaser to increase the price to his customers, accompanied by a concomitant decrease in the output he offers for sale.¹³²

which the direct purchaser's marginal cost has been increased by the unlawful overcharge. This distance is easily seen to be $\Delta MC = MC_2 - MC_1 = (1 + r_c) MC_1 - MC_1 = r_c MC_1$. This quantity, $r_c MC_1$, represents the initial incidence of the unlawful charge.

132. The geometrical configuration of cost curves, the demand curve, and prices and outputs, are the same in Figure 3 as in Figure 2, except that the post-conspiracy price charged by the direct purchaser has been raised from its pre-conspiracy level P_1 to its new post-conspiracy level P_2 . Similarly, the conspiratorially effected shift in the direct purchaser's cost curve has caused a reduction in his output from its pre-conspiracy volume Q_1 to its post-conspiracy volume Q_2 .

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plicable when imputing the distributional burden of the overcharge among as many links as there are in the distribution chain.

If the methodology applied correctly assesses the extent to which an overcharge is passed along to the first line of indirect purchasers, or the primary indirect purchasers, then the extent to which the overcharge is manifested as an increase in the cost structure of the primary indirect purchasers will also have been established. If significant, this increase in the cost to the primary indirect purchasers will induce them to alter their price and output decisions in the same way as did the direct purchasers when confronted with the initial incidence of the overcharge; namely, the primary indirect purchaser will increase his price and decrease his output in order to shift a portion of the overcharge onto the group of secondary indirect purchasers. The extent to which the primary indirect purchasers are able to effect this shift is revealed by applying the analytical methodology developed to assess the distributional incidence between direct purchasers and their immediate customers, the primary indirect purchasers. Thus, having developed a reliable method of assessing distributional incidence between the first two links in the distribution chain, that methodology can now be applied to assess subsequent shifting among more remote links in the chain. When all the links to the ultimate consumer have been exhausted, both the aggregate magnitude of the damages as well as its incidence among all firms in the chain of distribution will have been computed.¹³³

Figure 3 assesses the damages suffered by the direct purchaser less those passed along to his own customers. Prior to the imposition of the unlawful overcharge the direct purchaser's profits are represented by the area of the rectangle $ABCP_1$.¹³⁴ Subsequent to the antitrust violation, the new cost structure

133. The nature of the market mechanisms confronting firms operating at various links in the distribution chain may be such as to result in an ever dwindling portion of the overcharge shifted between successive links. This is an empirical question, however. The analysis in the text of this paper merely constitutes a method of computing the portion of the overcharge which may be shifted. The actual amount to be shifted in specific cases will depend on the magnitudes assumed by the variety of parameters which characterizes particular markets.

134. Figure 3, *supra* at text accompanying note 132.

confronting the direct purchaser induced him to raise his price and decrease his output to P_2 and Q_2 respectively. His new level of profits, hereinafter called post-violation profits, is represented by the area of the rectangle $DEFP_2$.¹³⁵

The measurable injury suffered by the direct purchaser is computed as the profits he lost due to the changes in the revenues and costs. The conspiratorially effected increase in costs was the proximate cause of the direct purchaser's decision to raise his price and lower his output. He did so only to mitigate the diminution in his profits resulting from the cost increase. The conclusion is that the lost profits constitute the recoverable damages if the direct purchaser brings a section 1 claim against the price-fixers. Likewise, the lost profits constitute the net burden of the overcharge to the direct purchaser, because it is only this portion of the burden which he was unable to pass on to his own customers. When a direct purchaser responds to an increase in his costs he accommodates his price/output configuration to mitigate its harmful effects, and his recoverable damages are computable as the difference between the area of rectangle $ABCP_1$ and rectangle $DEFP_2$.¹³⁶

Equation (1)

$$\text{Damages} = [r_c(1-L_1) - \left(\frac{L_1 E_2}{1+r_p} + 1\right) r_p] \frac{R_2}{1+r_p}$$

In this formula for computing the damages suffered by a direct purchaser the symbols have the following meanings:

r_c = the percentage increase in the direct purchaser's marginal cost brought about by the price-fixing conspiracy.

r_p = the percentage by which the direct purchaser raises his post-violation price above his pre-violation price.

E_2 = the price elasticity of demand for the direct purchaser's product, evaluated at the direct purchaser's post-violation price.

R_2 = gross sales revenue of the direct purchaser at his post-violation price/output configuration.

L_1 = the Lerner Index of Monopoly Power evaluated at the pre-

135. This figure is hereinafter called post-violation profits.

136. Appendix I carries out the computation to arrive at an algebraic statement of recoverable damages.

violation price/cost combination.¹³⁷

The damage assessment formula depicted in Equation (1)

137. A careful consideration of the definition of a competitive market reproduced above, or simply a contemplation of the market mechanism characteristics of actual oligopolies, suggests that the direct purchaser will be successful in passing on the unlawful overcharge only to the extent that he is able to exercise monopoly power in the market in which he sells his wares. The Lerner Index of Monopoly power is a measurement tool which allows us to incorporate this important determinant of the shiftability of price-fixing injuries. Lerner, *The Concept of Monopoly and the Measurement of Monopoly Power*, 1 REV. OF ECON. STUDIES 157 (1934) [hereinafter cited as the Lerner Index],

Lerner proposed a measure of monopoly which recognizes that "the mark of the absence of monopoly is the equality of price or average receipts to marginal cost." *Id.* at 161. Lerner suggested that monopoly be measured by the extent of divergence of price from marginal cost. Specifically, the Lerner Index is defined as: $L = (\text{Price} - \text{Marginal Cost}) / \text{Price}$. In perfect competition, market dynamics compel price to equal marginal cost and the value of the L index is zero. The greater the ability of the firm to price above marginal cost, the higher the value of the L index, and the greater the degree of monopoly inferred. This proposition is frequently affirmed by writers on the subject, sometimes embellishing it with allusions to ingress and egress from markets. Consider, for example, the following recent pronouncement: "The essence of monopoly power is the ability to prevent the expansion of capacity, (i.e. expansion by other firms manifested as an increase in existing rivals' output or by entry of new rivals) when price exceeds unit cost." DEMSETZ, HAROLD, TWO SYSTEMS OF BELIEF ABOUT MONOPOLY IN INDUSTRIAL CONCENTRATION: THE NEW LEARNING, 166 (Goldschmid, Mann & Weston eds. 1974). See also D. DEWEY, MONOPOLY IN ECONOMICS AND LAW, 70-96 (1966). Posner also identifies the divergence between price and cost as a manifestation of monopoly power: "The monopolist will always charge a price higher than the competitive price, where the 'competitive price' is 'equal' to the cost of making and selling the product in question." R. POSNER, ANTITRUST LAW: AN ECONOMIC PERSPECTIVE 9 (1976). For treatment of the conventional theory of monopoly pricing see R. POSNER, ECONOMIC ANALYSIS OF LAW 104-113 (1973). For further discussion of the theoretical and operational characteristics of the Lerner Index see F.M. SCHERER, INDUSTRIAL MARKET STRUCTURE AND ECONOMIC PERFORMANCE 50 (1970). Examples of attempts to apply the index to individual industries are provided by Dunlop, *Prior Flexibility and the Degree of Monopoly* 53 Q. J. OF ECON. 522-33 (1939); Tucker, *The Degree of Monopoly*, 54 Q. J. OF ECON. 167 (1940).

The Lerner Index is conceptually appropriate for a wide range of problems having to do with the economic consequences of exercised monopoly power. By examining the deviation from marginal cost pricing, it serves as an indicator of manifest, as opposed to latent, market power, and measures the social cost or harm of monopolistic practices. The application of the Lerner Index here will suppress the operational problems one might encounter in attempting to supply numerical estimates for its ingredients. The concern is to demonstrate that this theoretical tool, if properly used, will enable private plaintiffs, as well as courts, to undertake reasonably reliable determinations of passing-on issues.

The Lerner Index at the direct purchaser's pre-violation price is symbolized as L_1 or $L_1 = (P_1 - MC_1)/P_1$. Its magnitude represents the extent to which the direct purchaser has actually exercised his monopoly power prior to the increase in his costs effected by the price-fixing conspiracy. The larger this number is the more successful the direct purchaser will be in passing on the unlawful overcharge to his own customers.

can be illustrated by applying it to the situation where the direct purchaser is a perfect competitor in the market in which he sells his own product. In such a case the theory of competitive market dynamics precludes any attempt by the direct purchaser to shift the incidence of the unlawful overcharge to his own customers. This is because in any given market period the demand curve facing him is infinitely elastic, represented graphically as a horizontal line. Further, he is unable to raise his price above the competitive market level, $r_p = 0$, and his ability to exercise monopoly power is therefore nil, $L_1 = 0$. Thus, in the perfectly competitive case we see that the damages recoverable by direct purchasers are computed as:

Equation (2)

$$\text{Damages} = r_c R_2$$

Equation (2) states that if price-fixers sell directly to direct purchasers who are themselves perfect competitors, then the entire burden of the unlawful overcharge is borne by those direct purchasers. This burden is measured as the percentage by which the direct purchaser's marginal cost has increased, due to the overcharge, multiplied by the gross sales revenue enjoyed by the direct purchasers subsequent to any output adjustment made to accommodate the cost increase.

In the antipodal case where the direct purchaser exercises monopoly power in both pre-violation and post-violation scenarios, the application of the damages assessment formula is not as simple because the numerical values of the constituent term can only be ascertained empirically. We do not know if L_1 will be a large positive number, or if E_2 will be a negative number which is small in absolute value. The actual values of L_1 and E_2 will vary among cases; in any specific case the determination perforce devolves to one of econometric estimation.¹³⁸ Table 3

138. Scherer, *supra* note 137, 50, comments that "the chief drawback of the Lerner Index" is that "it is difficult to derive marginal cost estimates from accounting data." *Id.* If courts are willing to admit into evidence economists' estimates of such mysterious ideas as cross-price elasticities, four firm concentration ratios, unrealized profits, fore-closed market shares and Herfindahl indices, none of which are unambiguously identifiable, the courts should be at least as receptive to cost estimates, purportedly based on identifiable and verifiable balance sheet and income statement entries. The task of esti-

conveys an idea of the magnitude of the quantities involved.¹³⁹ It shows the percentage increase in the direct purchaser's price which he will impose on his customers or his passees, if he is to shift the entire burden of the overcharge onto them. Each of the three subtables in Table 3 is predicated upon differing post-violation price elasticities for the direct purchaser's product so that

mating the magnitude of the Lerner Index may not be as difficult as is commonly thought if there is good reason to believe that marginal cost, whatever its magnitude, is invariant with respect to total output, namely a horizontal line. In that case we may obtain a good estimate of the index by multiplying its numerator and denominator by total unit sales. This will have the effect of allowing us to measure the index as the rate of return on sales: $L = \frac{(P-MC)}{P} = (P-MC) \cdot Q = \frac{P \cdot Q - MC \cdot Q}{(P \cdot Q)}$; PQ = Total Sales Revenue; $MC \cdot Q$ = Total Costs; therefore $PQ - MC \cdot Q$ = Profits and the rate of return on sales is $ROS = L = Profit/Sales$. These two components, profits and sales revenue, obviate the task of estimating marginal cost magnitude.

139.

Table 3

Table 3a Extreme Inelasticity $E_p = -0.1$

L_1	.1	.2	.3	.4
r_c				
.05	.046	.041	.036	.032
.10	.091	.082	.072	.042
.15	.136	.123	.108	.094
.20	.182	.163	.144	.125

Table 3b Unitary Elasticity $E_p = -1.0$

L_1	.1	.2	.3	.4
r_c				
.05	.045	.050	.049	.050
.10	.100	.100	.097	.095
.15	.150	.146	.143	.139
.20	.200	.193	.188	.182

Table 3c Extreme Elasticity $E_p = -10.0$

L_1	.1	.2	.3	.4
r_c				
.05	.236	.222	.206	.190
.10	.350	.327	.303	.278
.15	.441	.412	.382	.350
.20	.525	.489	.451	.413

E_2 assumes a different value in each subtable. The columns of the subtables give an array of hypothetical values for the Lerner Index, and the rows represent different hypothetical values for the increase in the direct purchaser's marginal cost, r_c . The elements in the cells of the tables represent the values which r_p must assume if the direct purchaser is to pass on all of the unlawful overcharge, conditional on the values of E_2 , L_1 , and r_c .

Table 3a considers the case where the demand curve facing the direct purchaser is extremely inelastic at the post-violation price charged his customers.¹⁴⁰ Table 3a implies that if the demand for the passer's product is extremely inelastic, the passer has the ability to shift the entire burden of the unlawful overcharge onto his own direct customers by effecting a price increase which is less, in percentage terms, than his own marginal cost increased. For example, assume that the conspirators are successful in raising the price to the direct purchaser of one of his input factors by 25%. Assume also that this input factor represents 40% of the direct purchaser's marginal costs. Then the percentage by which the direct purchaser's marginal costs increases can be depicted as: $r_c = (.25) (.40) = .10$. If the direct purchaser enjoyed a pre-violation profit margin of 20%, as measured by the Lerner Index $L_1 = .20$, then an inelasticity of the passee's demand curve informs the direct purchaser that his total profits will be unaffected by the price-fixing conspiracy if he raises his own price by 8.2% thereby passing on the unlawful overcharge. In an actual case a strict application of the *Illinois Brick* rule would permit a direct purchaser to recover treble "damages" for an injury he never suffered, and at the same time the rule would bar the direct purchaser's customers from recovering any damage although they suffered all the injury imposed by the price-fixers. This anomaly subverts one of the chief objectives of section 4 of the Clayton Act, that of compensation to those harmed by illegal price fixing conspiracies.¹⁴¹

Table 3b examines the situation where the demand for the direct purchaser's product is of unitary elasticity.¹⁴² If the direct purchaser wishes to pass on all of the unlawful overcharge in

140. See Table 3a, *supra* note 139.

141. 15 U.S.C. § 15.

142. See Table 3b, *supra* note 139.

such a case, he must raise his price by approximately the same percentage as his marginal costs have increased.

In Table 3c the demand for the direct purchaser's product is extremely elastic.¹⁴³ In this case if the direct purchaser wants to maintain his profits in the face of an increase in his costs, the price increase put into effect will be much larger than the percentage increase in his costs.

The three hypothetical cases treated by the subtables of Table 3 illustrate the conditions which are conducive to finding that passing-on has occurred. Even if the court finds that the price increase by the direct purchaser is not large enough, given the relevant elasticity and degree of monopoly power, to pass on the entire burden of the unlawful overcharge, the actual damages suffered by the direct purchaser are given by the formula in Equation (1).¹⁴⁴ The portion of the burden which the direct purchaser does pass on can also be ascertained easily. The direct purchaser's increase in the price of his output, symbolized by r_p , constitutes a factor price increase to the first line indirect purchaser, the direct purchaser's most proximate passee. Thus the magnitude of r_p is one component in determining how much the passee's marginal cost has risen; the other component is the portion of the marginal cost of the passee which the factor in question represents.¹⁴⁵ To compute the actual damages suffered by the first line passee, numerical estimates for the ingredients of

143. See Table 3c, *supra* note 139.

144. See equation 1, *supra* text accompanying note 136.

145. The formula used to compute unshifted damages does not depend on the assumption that the passer acts to maximize profits. The formula assumes only that, if the passer is confronted with an increase in his marginal costs, he will try to offset some of this cost increase by raising the price of his wares to his own customers, the passees. If, in fact, the passer is a classical profit maximizer, economic analysis allows derivation a much more specific measure of the extent to which he will pass on the unlawful overcharge. In the case of a profit maximizer who faces a linear demand function and an increase in his constant marginal cost curve, the amount by which he raises his price is half the amount of the cost increase which he experiences. See Appendix 2, *infra*, for a mathematical proof of this proposition. Thus, in the case where the passer does systematically adjust his price/output combinations as to maximize profits we have the relation

$$r_p = \frac{1}{2} r_c \left(\frac{MC_1}{P_1} \right).$$

This relationship enables the trier of fact to determine the portion of the increase in the direct purchaser's costs which are passed on to the first line of indirect purchasers; and how much of the increase in the latter's cost are thereafter passed on to their customers and so on *ad infinitum*.

Equation (1) are needed only for the passee's Lerner Index, the elasticity of the demand curve for the passee's output, and the percentage by which the first line passee raises his price when passing on the burden to those further down the distribution chain.¹⁴⁶

To summarize, the formula expressed in Equation (1) allows courts and enforcement agencies to compute reasonably reliable estimates of the amount of injury imposed on each link in a distribution chain by a price-fixing conspiracy. The method of computation does not rely for its validity upon any of the "simplifying assumptions" which the Supreme Court noted in *Illinois Brick*.

For the most part, the only ingredients of Equation (1) required to render it operational are directly observable economic quanta, such as price and cost changes. The only ingredient which is not directly observable is the elasticity measure. Despite some misgivings expressed by the Court in *Illinois Brick* regarding the usefulness of elasticity estimates,¹⁴⁷ the ever growing number of cases they have been admitted into evidence signifies their probative value and attests to the willingness of courts to the techniques and insights of modern econometrics.¹⁴⁸

146. See *supra* note 139.

147. *Illinois Brick Co. v. Illinois*, 431 U.S. at 741-42. See *supra* text accompanying note 57.

148. In their discussion of the use of elasticity estimates in antitrust litigation, Professors Posner and Landes write:

Although econometric techniques are available that can, in principle, be used to estimate point elasticities, there are many practical difficulties with such estimations. We are fearful of the increase in costs, time and uncertainty involved in antitrust enforcement if the passing-on issue is injected into suits by direct or indirect purchasers.

Landes & Posner *supra* note 1, at 619. The "fearfulness" with which Landes and Posner regard the introduction of elasticity measures into antitrust litigation, motivates them to cite with disapproval the paper by Elmer Schaefer who has trenchantly advocated the use of elasticity concepts to analyze passing-on questions. *Id.* See Schaefer, *Passing-On Theory in Antitrust Treble Damage Actions, An Economic and Legal Analysis*, 16 WM. & MARY L. REV. 883 (1975). In their critique of the Schaefer article Landes and Posner write "Yet he [Schaefer] does not cite, nor do we know of, a single case in which an antitrust court has attempted to estimate an elasticity of demand or supply." Landes & Posner, *supra* note 1, at 619 n. 39. This observation, I would suggest, is beside the point. As a practical matter the antitrust courts make findings of fact based on the evidence adduced at trial through the testimony of witnesses, expert and otherwise. The courts are called upon to "estimate" a demand elasticity only insofar as they are required to weigh the probative value of the experts' own estimates. To suggest, as Landes and Pos-

V. Prospective Consequences of the Rule Proscribing Offensive Passing-On

This section of the article examines a potential consequence of the *Illinois Brick* rule which does not seem to have come to the attention either of its supporters or its detractors: the possibility that a denial of a remedy to all indirect purchasers may be regarded by potential violators as an opportunity to effect an invulnerable price-fixing conspiracy by arranging for transfer payments to innocent direct purchasers, thereby averting liability under section 1 of the Sherman Act.¹⁴⁹

A. Two-Dimensional Conspiracy

Initially the proposition that a two-dimensional price-fixing conspiracy may be effected with impunity should be discarded. Consider the legal characterization of the original group of price-fixers, representing link N , somewhere in the distribution chain. This group constitutes a horizontal conspiracy. If that group persuades their direct purchasers, at the successive link $N+1$ in the distribution chain, to actively participate as willing co-conspirators fixing prices, the conspiracy will result in victimization of more remote links in the chain. This combination constitutes a hybrid horizontal/vertical conspiracy; it becomes a two-dimensional price-fixing conspiracy. This sort of anticompetitive behavior violates section 1 of the Sherman Act, and nothing in *Illinois Brick* affords protection to the conspirators against a challenge by first level indirect purchasers. These first-level indirect purchasers are those at link $N+2$, namely those customers of the conspirators at line $N+1$ in the distribution chain. Simply stated, the allegation of a two-dimensional conspiracy has the effect of transmuting the plaintiff's status from that of indirect purchaser to that of direct purchaser, thereby removing him from the ambit of *Illinois Brick*.¹⁵⁰ The following discussion con-

ner seem to, that courts are not competent to produce their own estimates of elasticity is disingenuous. In actual fact an antitrust court will seldom, if ever, be called upon to estimate an elasticity. Their "estimate" will consist of the ratification of an expert's bona fide estimate.

149. 15 U.S.C. § 1.

150. Several cases decided after *Illinois Brick* establish that the two-dimensional conspiracy of the kind described above is not immune to attack by "indirect purchasers"

cerns the situation where the first-line direct purchasers, those at link $N+1$, are innocent of any overt or tacit conspiratorial conduct or intent. In this instance, the *Illinois Brick* holding may create opportunities for potential violators to design a price-fixing mechanism which is insulated against attack by those who are its only victims.

B. *Insulated Conspiracies*

A few elementary propositions can be set out regarding the conditions necessary for a conspiracy to exist. A conspiracy consists of a collusion of firms and, in the case of a horizontal conspiracy, that collusion is an alliance of competing firms. Collusion will tend to occur in a horizontal conspiracy whenever it is more profitable to all of the participants than their feasible alternatives. For this to be true, not only must the joint profit maximum exceed the combined competitive return, but also none of the parties to the collusion must be able to obtain a higher return by means of some feasible strategy, assuming that all the others adhere to the collusive agreement. In other words, for a price-fixing conspiracy to be successfully effectuated, each conspirator must regard the expected net benefits to himself of violating the collusive agreement to be exceeded by the expected net benefits to himself of observing that agreement.

In a typical price-fixing conspiracy the participating firms retain their separate identities and separate control over their policies subject to the terms of the collusive agreement. The possibility of making side payments means that co-conspirators can freely transfer sums of money among themselves or to non-par-

under section 1. 15 U.S.C. § 15. See, e.g., *Gas-A-Tron of Arizona v. American Oil Co.*, 1977-2 Trade Cas. (CCH) ¶ 61,789 (D. Ariz. 1977). In the *Gas-A-Tron* case the allegation of a conspiracy between refiner and wholesaler to fix resale prices avoided dismissal by the court. The court ruled that no pass-on of overcharges was involved and that *Illinois Brick* was inapplicable where refiners were alleged to have conspired with plaintiffs' suppliers to fix prices at which the plaintiffs purchased gasoline. See also *Florida Power Corp. v. Granlund*, 78 F.R.D. 441 (M.D. Fla. 1978) (an allegation of a conspiracy between a utility and its oil suppliers to fix the price of supplied raw material is sufficient to allow a direct purchaser from the utility to intervene in an action by the utility against oil suppliers); *In re Cement and Concrete Antitrust Litigation*, 1978-1 Trade Cas. (CCH) ¶62,069 (D. Ariz. 1978) (motion for summary judgment denied where there is an issue of fact as to whether any defendant combined or conspired with entities from which plaintiffs purchased).

ticipating parties. These transfers may be independent of sales or the outputs of the firms. The transfers may be used to induce conduct of non-conspirators to promote the interests of the members of the conspiracy. This last proposition suggests the means by which a group of price-fixers may attempt to immunize themselves against liability under section 1 of the Sherman Act.¹⁵¹

There is a certain market structure which is conducive to a two-dimensional price-fixing conspiracy. The market structure must be such as to permit collusion between links. Collusion among sellers seems more likely if the buyers are numerous and relatively small. Suppose, on the contrary, there were a few large buyers with a fairly stable demand. These may be assigned to particular members of the price-fixing conspiracy who can thereby share the market. The very paucity in number and relatively large size of the buyers, however, work against a monopoly return altogether. One of the buyers can threaten to withdraw his patronage from a seller, thus threatening the bulk of seller's business, and compelling the seller to betray the conspiracy. With few relatively large buyers the situation resembles bilateral monopoly, and it would be surprising to find the sellers obtaining a monopoly return at the buyers' expense. It is more likely to find a combination of buyers and sellers to exploit their common interest at the expense of third parties, the indirect purchasers. A two-dimensional conspiracy has been shown to be vulnerable to attack by the indirect purchasers. But if the sellers form a purely horizontal price-fixing combination instead of recruiting their direct purchasers into a conspiracy, they can re-transfer to their direct purchasers a sufficiently large portion of the unlawful exaction to compensate those direct purchasers for the diminution in their profits.

The specific mechanism by which these transfers are effected can be more particularly described. In Stage 1, sellers at level N in the distribution chain form themselves into a horizontal price-fixing conspiracy and proceed to raise the price to their direct purchaser customers at link $N+1$. Those direct purchaser customers react in Stage 2 to the increase in the price of one of their factor inputs by raising the price to their customers at link

151. 15 U.S.C. § 1.

$N+2$ in the manner illustrated by Figure 3.¹⁵² At this point the first line direct purchaser customers have standing and incentive to bring a section I action against the conspirators. In Stage 3, however, the price-fixers transfer a lump sum payment to their direct purchaser customers. The amount of the lump sum payment equals the profits lost by the direct purchasers as a consequence of their price/output adaptation to the cost increase. The numerical value of these lump sum transfers is expressed by Equation (1).¹⁵³ Subsequent to the transfer, the firms at link $N+1$ find themselves in the same profit position as that prior to the increase in their costs. The first line indirect purchasers, namely those at link $N+2$, however, are confronted with an increase in the price of one of their factor inputs, but without a legal recourse because those from whom they purchased their goods are not co-conspirators.

The quicksilver quality of this economic analysis may be dispelled by recognizing that the gross injury inflicted on the first-line purchasers is transferred to the conspirators; the same gross injury is mitigated by the direct purchasers through a price increase imposed on their customers. The result is that the lump sum payment, necessary to be retransferred by the horizontal conspiracy to make the direct purchasers whole, is less than the amount originally exacted from those purchasers. The difference between the two constitutes the net gain to the conspiracy and it is ultimately manifested as injury to the chain of indirect purchasers. This hypothetical transfer/retransfer device is most likely to occur in those markets where the economic characteristics of firms at adjacent links conform to the bilateral monopoly conditions described previously.

This sort of collusive arrangement may be very appealing to participants in a horizontal conspiracy because of two special features: first, the transfer/retransfer device by which the price-fixers first exact income from and subsequently reimburse them diminishes the incentives for those direct customers to bring an action under section 1; second, the parties who bear the burden of the price-fixing conspiracy cannot vindicate their rights because *Illinois Brick* denies them a forum.

152. Figure 3, *supra* text accompanying note 132.

153. Equation (1), *supra* text accompanying note 136.

If the direct purchasers are not merely passive instruments through which the price-fixers exercise their monopoly power, a remedy will be available to the indirect purchasers. Virtually all courts agree that merely passing on a price increase is not, alone, sufficient to brand the passers as co-conspirators with their price-fixing suppliers;¹⁵⁴ *Illinois Brick* will only permit first-line indirect purchasers to recover changes based on a two-dimensional conspiracy theory if the plaintiffs can allege and prove an actual conspiracy between the price-fixers and the passers. It remains to be seen whether courts will hold the transfer/retransfer device to constitute conduct sufficient to find that the passers/transferees are liable under section 1 as co-conspirators with their suppliers. *Illinois Brick* does not suggest such a theory of liability. If the direct purchaser responds to an increase in his costs merely by raising his own price,¹⁵⁵ and if he neither solicits

154. See, e.g., *Pony Creek Cattle Co. v. A. & P.*, (*In re Beef Industry Antitrust Litigation*) 600 F.2d 1148 (5th Cir. 1979), *cert. denied*, 449 U.S. 905 (1980) (act of passing-on insufficient to brand packers co-conspirators with food retailers; *Illinois Brick* does not recognize an exception for a vertical conspiracy where co-conspirator middlemen are not named as defendants); *Mid-West Paper Product Co. v. The Continental Group, Inc.*, 596 F.2d 573 (3d Cir. 1979) (claims by indirect purchasing supermarkets against manufacturers of consumer bags for price fixing are barred where no possibility that pre-existing fixed quantity cost-plus contracts could be shown at each intermediate level of distribution); *Parkview Markets, Inc. v. Kroger Co.*, 1978-2 Trade Cas. (CCH) ¶ 62,373 (S.D. Ohio 1978) ("[t]he holding of *Illinois Brick* not limited to the facts of the case, an indirect purchaser bringing an action for a passed-on overcharge; damage action by grocery wholesaler/cooperative was dismissed where only indirect injury in the form of lost profits and members could be caused by claimed monopolization at retail level); *Fontana Aviation, Inc. v. Cessna Aircraft Co.*, 460 F. Supp. 1151 (N.D. Ill. 1978) *Illinois Brick* held to bar claim of attempted monopolization of market for installing avionics in manufacturer's aircraft by manufacturer's pricing to plaintiff's supplier who passed on inflated prices to plaintiff; economic realities of pass-on would be same even if distributor conspired with manufacturer and *Illinois Brick* would preclude recovery of damages from manufacturer; *Dart Drug Co. v. Corning Glass Works*, 1980-1 Trade Cas. (CCH) ¶63,126 (D. Md. 1979) (drug store chain claimed that manufacturer's monopolization and group boycott forced it to buy from wholesalers at prices higher than those available to some of chain's direct-buying competitors. It was not premised on any overcharge that had been passed on and *Illinois Brick* was inapplicable but not where prices alleged to have been set above competitive market level).

155. This approach is generally referred to as cost-plus pricing as Pappas and Brigham state:

Surveys of actual business pricing indicate that cost-plus pricing, or full-cost pricing as it is sometimes called, is by far the most prevalent pricing method employed by business firms. There are many varieties of cost-plus pricing, but a typical one involves estimating the average variable cost of producing and marketing a

nor enters into an agreement with his suppliers respecting a lump sum payment, then it would seem that the element of intent necessary to find liability is lacking. This behavior reflects ordinary and reasonable non-collusive business policies, and courts should hesitate before declaring it unlawful.

The firm's ability to shift to its customers an increase in its own costs depends, in part, on the elasticity of the demand curve facing it. In general, the further one moves from the retail level towards the level of the original producer, the more inelastic the demand will be. This is a consequence of the fact that marketing margins tend to be inflexible. The implication of the change in demand elasticities as one moves down the distribution chain towards the ultimate consumer is that the transfer/retransfer mechanism we have examined will be increasingly more difficult to implement. That is to say, to the extent that a firm possesses monopolistic power, the demand for its product will be inelastic and the ability of that firm to pass on cost increases will be greater. As one moves down the distribution chain the demand elasticities faced by firms at successive links tend to increase thereby diminishing the ability of those firms to pass on cost increases. Thus, the incentives for rival firms to organize themselves into a horizontal price-fixing conspiracy are greatest when they perceive that their proximate victims, the direct purchasers, are capable of exercising monopoly power. The direct purchasers' market power is manifested as an inelastic demand curve in the market in which the indirect purchasers are the buyers. This reasoning suggests that price-fixing conspiracies are most likely to occur as firms move further away from the ultimate consumer.¹⁵⁶ A proliferation of monopolies is rendered

particular product, adding a charge for overhead, and then adding a percentage markup, or margin, for profits.

J. PAPPAS & E. BRIGHAM, *MANAGERIAL ECONOMICS* 406 (1979). Moreover, the policy of cost-plus pricing has received judicial recognition in the *Illinois Brick* case: "Firms in many sectors of the economy rely to an extent on cost-based rules of thumb in setting prices." *Illinois Brick Co. v. Illinois*, 431 U.S. at 744.

156. Commentators have observed that a price-fixing agreement is more likely for a product that is subject to an inelastic demand because greater profits can be exacted under such market conditions. See Erickson, *Economics of Price Fixing*, 2 *ANTITRUST L. & ECON. REV.* 83 (1969); Kuhlman, *Nature and Significance of Price Fixing Rings*, 2 *ANTITRUST L. & ECON. REV.* 69 (1969); Posner, *Oligopoly and the Antitrust Laws: A Suggested Approach*, 21 *STAN. L. REV.* 1562, 1569-75, 1603-04 (1969); Posner, *A Program*

feasible by the holding of *Illinois Brick* because it enables a group of price-fixers to design a transfer/retransfer scheme which removes from the only parties who have standing to sue their incentive to do so.¹⁵⁷

To sum up, price-fixing violations seem especially likely to occur when a direct purchaser can pass the unlawful overcharge on to his customers. The elasticities of demand toward the consumer-end of the distribution chain are likely to be greater and the firms whose markets are at that end will perceive themselves unable to pass on a significant part of the overcharge. Thus, at

for the Antitrust Division, 38 U. CHI. L. REV. 500, 515 n. 47 (1971). For a general discussion of characteristics which make an industry ripe for successful price-fixing, see G. STIGLER, *THE ORGANIZATION OF INDUSTRY* 36-63 (1968).

157. The absence of an incentive for direct purchasers to sue price-fixers can be traced to two aspects of the transfer/retransfer scheme. The first aspect, which has been discussed in the text, is that the scheme has the effect of permitting the direct purchaser to enjoy an unabated volume of profits notwithstanding the fact that his output has been contracted. Thus, the direct purchaser perceives no injury to himself inflicted by the price-fixers. Secondly, and less obvious, is the fact that the output reduction which the direct purchaser undertakes has the consequence of freeing pecuniary or other resources which would otherwise have been allocated to the production of output. These newly freed resources can be reallocated into investment opportunities which offer rates of return commensurate with their riskiness. The earnings which the newly freed resources bring into the firm are added to the profits which the firm already enjoys. The result is that the transfer/retransfer scheme enables the direct purchasers to enjoy greater earnings than they would have but for the price-fixing conspiracy. Direct purchasers in such an enviable position will be understandably reluctant to kill the goose that lays the golden eggs by suing the price-fixers.

Moreover, the higher price which the direct purchaser pays to the price-fixing seller may confer additional benefits if the direct purchaser is a firm which is subject to regulatory action governing its permitted rate-of-return to capital. For example, the electrical equipment price-fixing conspiracies may have benefitted electrical utilities in jurisdictions where regulatory agencies use reproduction-cost valuation to assess the rate base. In those jurisdictions, payment of a higher price for a new piece of equipment may lead to an increased valuation for a utility's entire stock of previously purchased equipment. *Energy, Regulated Utilities and Equipment Manufacturer's Conspiracies in the Electrical Power Industry*, 4 BELL J. ECON. & MGMT. SCI. 322-29 (1973); Westfield, *Regulation and Conspiracy*, 55 AM. ECON. REV. 424 (1965). The dissenting opinion of Justice Brennan in the *Illinois Brick* case reaches the same conclusion:

Today's decision flouts Congress' purpose and severely undermines the effectiveness of the private treble-damages action as an instrument of antitrust enforcement . . . the Court's decision frustrates 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.

Illinois Brick Co. v. Illinois, 431 U.S. at 749 (Brennan, J., dissenting).

the consumer end of the distribution chain, the incentive to discover and prosecute price-fixing conspiracies is the greatest. If these firms are denied the opportunity to litigate their claims merely because the *Illinois Brick* decision relegates them to the status of indirect purchasers, that denial will incapacitate the very parties who are likely to be the most vigorous private enforcers of the antitrust laws. It does not seem to me to be an exaggeration to characterize such a result as a perversion of the spirit of antitrust legislation.

VI. Procedural Considerations

The Supreme Court in *Illinois Brick* identified the prospect of multiple liability as one reason for proscribing the use of offensive passing-on in private treble damage claims.¹⁵⁸ It would be unfair to the defendant, the Court argued, to allow offensive passing-on to be used against him, while at the same time denying him the use of the passing-on theory as a defense in light of the *Hanover Shoe* decision.¹⁵⁹

The holdings of *Hanover Shoe*, and its mirror image, *Illinois Brick*, have breathed new life into Judge Cardozo's famous dictum that the reconstruction of the citadel of privity is proceeding apace in antitrust law.¹⁶⁰ Although the language of *Hanover Shoe* and *Illinois Brick* does not expressly invoke the doctrine of privity, the denial to the parties of the use of defensive and offensive passing-on theories has the procedural effect of denying a forum to all persons except those who can prove they deal directly with each other, thus effectively requiring privity.

The dissenting opinion of Justice Brennan in *Illinois Brick* identified a variety of procedural devices available to defendants

158. *Id.* at 738.

159. The Court stated:

Allowing offensive but not defensive use of pass-on would create a serious risk of multiple liability for defendants A one-sided application of *Hanover Shoe* substantially increases the possibility of inconsistent adjudications - and therefore of unwarranted multiple liability for the defendant - by *presuming* that one plaintiff (the direct purchaser) is entitled to full recovery while preventing the defendant from using that presumption against the other plaintiff . . . we are unwilling to "open the door to duplicative recoveries" under Section 4.

Id. at 730-31 (citation omitted).

160. *Ultramares Corp. v. Touche, Viven & Co.*, 255 N.Y. 170, 180, 174 N.E. 441, 445 (1931).

and to the courts as a means of averting multiple liability.¹⁶¹ These include intra-district¹⁶² and inter-district transfer¹⁶³ and consolidation of cases, statutory interpleader,¹⁶⁴ the doctrines of res judicata and collateral estoppel. Moreover, it has been observed that the relatively short statute of limitations period of four years for treble damage antitrust suits also protects defendants to some extent.¹⁶⁵ Additional protection is afforded defendants by the Federal Rules of Civil Procedure governing intervention¹⁶⁶ and interpleader,¹⁶⁷ and compulsory joinder of parties,¹⁶⁸ and by the possibility of placing all or part of the damages awarded to a direct purchaser in an interest bearing escrow account for a definite period of time to satisfy later judgments in favor of remote purchasers.¹⁶⁹

161. *Illinois Brick Co. v. Illinois*, 431 U.S. at 761-64.

162. 28 U.S.C. § 1404(b) (1976).

163. *Id.* § 1407.

164. *Id.* § 1335. The majority opinion in *Illinois Brick* disparages the utility of statutory interpleader citing the bond requirement:

[A] condition precedent for invoking statutory interpleader is the posting of a bond for the amount in dispute . . . and a defendant may be unwilling to put up a bond for the huge amounts normally claimed in multiple party treble damage suits.

Illinois Brick Co. v. Illinois 431 U.S. 720, 738 n. 20 (citation omitted).

This obstacle can be averted by the courts if, in the exercise of their discretion, they set the required bond at a relatively low level. See Note, *The Effect of Hanover Shoe on the Offensive Use of the Passing-On Doctrine*, 46 S. CAL. L. REV. 98, 116 (1972); Comment, *The Passing-On Defense in Treble Damage Antitrust Suits* 1969 U. ILL. L. F. 377, 387.

165. 15 U.S.C. § 15b. For a discussion of problems arising under this statute see Wheeler and Jones, *The Statute of Limitations for Antitrust Damage Actions: Four Years or Forty?*, 41 U. CHI. L. REV. 72 (1973).

166. FED. R. CIV. P. 24.

167. FED. R. CIV. P. 22. It has been observed that interpleader under Rule 22 may be unavailable to an antitrust defendant because of the unlikelihood of complete diversity of citizenship in antitrust cases. See McGuire, *The Passing-On Defense and the Right of Remote Purchasers to Recover Treble Damages Under Hanover Shoe*, 33 U. PRR. L. REV. 177, 197 n. 65 (1971). The issue of apportionment of treble damages, however, would provide "federal question" jurisdiction, thereby permitting Rule 22 interpleader even if the diversity requirement is not satisfied. See 3 J. MOORE, W. TAGGART & J. WICKER, *MOORE'S FEDERAL PRACTICE* ¶ 22.04(2) (2d ed. 1974).

168. FED. R. CIV. P. 19.

169. The Court in *Hanover Shoe*, while expressing no opinion as to whether passing-on had occurred, allowed for the use of an interest bearing escrow account until the statute of limitations becomes a bar to other possible claims; this fund would be accessible to plaintiffs who sue within the statutory period and establish damages. *Hanover Shoe, Inc. v. United States Machinery Corp.*, 392 U.S. at 488-89, 492-94. Cf. *S.E.C. v.*

A thorough discussion of the efficacy of these procedural mechanisms is well beyond the scope of this article. Those recited have been identified by commentators and the courts as procedures which may be invoked to preclude a finding of multiple liability. These mechanisms may be imperfect and subject to unforeseen obstacles in application, yet their availability implies that the prospect of multiple liability is not an inductable consequence of the doctrine of offensive passing-on. A more fundamental question is whether a finding of multiple liability constitutes such an injustice as to warrant an absolute prophylactic measure such as the rule proscribing offensive passing-on.

Consideration of this question starts from the proposition, discussed in Section IV, that the deterrent objective of civil antitrust actions is achieved only to the extent that potential violators have reason to expect that their contemplated violations will be unprofitable. This proposition dovetails very neatly with Justice Brennan's observation that "from the deterrence standpoint, it is irrelevant to whom damages are paid, so long as someone redresses the violation."¹⁷⁰ If potential violators perceive a significant likelihood of multiple liability, and if Justice Brennan is correct in his supposition that the potential violators are indifferent to the identity of judgment creditors, the incontrovertible conclusion is that a prospect of multiple liability augments the deterrent efficacy of the antitrust laws. This is because the prospect of multiple liability constitutes more of a threat to potential violators than they would perceive in its absence. I tried to show in Section IV that however large the threat of multiple liability may be, it can never be too large; if it is large enough to succeed, it is never realized. From a pure deterrence standpoint, then, multiple liability ought to be encouraged by the construction of the antitrust laws.

Regarding the more difficult problem of compensatory fairness, the prospect of multiple liability entails the balancing of

Texas Gulf Sulphur Co., 446 F.2d 1301 (2d Cir. 1971) (corporate insider who traded with access to inside information was required to pay profits into a fund; undistributed funds at the end of five years became the property of the corporation, although it was not damaged by the violation). The availability of such a technique in an antitrust action was suggested in *Missouri v. Stupp Bros. Bridge & Iron Co.*, 248 F. Supp. 169, 177 (W.D. Mo. 1965).

170. *Illinois Brick Co. v. Illinois*, 431 U.S. at 760.

equities between an adjudicated antitrust violator and innocent victims. The majority opinion in *Illinois Brick* undertook this balancing task with a suprising degree of casualness, relegating the analysis to a terse footnote:

[P]roponents of the use of the offensive passing-on doctrine ultimately fall back on the argument that it is better for the defendant to pay sixfold or more damages than for an injured party to go uncompensated. ("a little slopover on the shoulders of the wrongdoers . . . is acceptable"). We do not find this risk acceptable.¹⁷¹

The Court gives no reason for its "finding" that the risk of multiple liability is unacceptable. Nor does the Court acknowledge that some sort of equity calculus should be applied in order to determine the parameters of an "acceptable" risk of multiple liability. Instead, the Court simply imposes a Draconian proscription which deems any risk of multiple liability, however small, to be unacceptable. It is odd, at the very least that the Court should be so solicitous of the pecuniary welfare of adjudicated antitrust violators.

The main point associated with the compensatory fairness of multiple liability can be simply stated: is it fair that an adjudicated wrongdoer should be compelled to pay treble damages not only to those persons he has injured, the remote purchasers, but also to those persons who sustained little or no injury, the direct purchasers? It has been pointed out that the latter constitutes a windfall to the direct purchaser plaintiff.¹⁷² It clearly violates the spirit of section 4 for the courts to hold that multiple liability is intolerable solely because it may result in a windfall to some plaintiffs. Theoretically, two-thirds of every private antitrust damages award, the punitive portion of the judgment mandated by section 4, constitutes a windfall to the judgment creditor.¹⁷³ From this perspective the issue is transmuted from

171. *Id.* at 731 n.11. (citations omitted).

172. It would be "paradoxical to deny recovery to the ultimate consumer while permitting the middleman a windfall recovery." P. AREEDA, *ANTITRUST ANALYSIS: PROBLEMS, TEXT, CASES* 75 (2d ed. 1974). This passage was quoted with approval by Justice Brennan. *Illinois Brick Co. v. Illinois*, 431 U.S. at 761 (Brennan, J., dissenting).

173. The characterization of two-thirds of the damages constituting a windfall must be qualified; a portion of that two-thirds "punitive" award goes to reimburse the plaintiff for real injuries he sustained but which are themselves not recoverable as compensatory

one of whether to allow a windfall to one, to how much windfall is to be deemed "too much." Congress has already addressed this issue insofar as it has legislated its approval of a windfall representing twice the actual damages sustained.

In addressing the equities from the defendant's perspective, one relevant question which must be considered is how much protection the law should confer on an adjudicated antitrust violator. First, it is arguable that requiring a defendant to chance multiple liability is more consistent with the Congressional purpose behind antitrust laws than is denying standing to injured parties.¹⁷⁴ Second, as a practical matter the burden on the judgment debtor of a treble damage award is frequently less than what might be supposed. At least one study has concluded that antitrust violators often profit from their wrongdoing despite incurring treble damage liability.¹⁷⁵ Finally, it should be remembered that the prospect of multiple liability is always uncertain; even if the use of offensive passing-on is permitted, the burden of establishing liability remains with the plaintiff whether he is a direct or indirect purchaser. This article argues that the risk of multiple liability to defendants should not outweigh the rights of genuinely injured persons to seek redress. In the words of one court: "[c]utting off the right of such a substan-

"damages." These might include such injuries as: foregone interest, earnings, and other opportunity costs of funds; diversion of managerial skill from the running of the business to the management of the litigation; and searching for and establishing business relations with new new suppliers who are not members of the price-fixing conspiracy. It seems fairly obvious, however, that these sorts of injuries are not likely to be of such magnitude as to reduce the windfall element of the treble-damage award to zero.

174. The majority opinion in *Illinois Brick* purports to divine Congressional intent by considering the legislative history of the Hart-Scott-Rodino Antitrust Improvements Act of 1976, 15 U.S.C. § 15c (1976). The Court's analysis of intent, carried out in another tersely worded footnote, concludes simply "we think the construction of section 4 (of the Clayton Act) . . . cannot be applied for the exclusive benefit of plaintiffs. Should Congress disagree with this result, it may, of course, amend the section to change it." *Illinois Brick Co. v. Illinois*, 431 U.S. at 733 n. 14. In effect the Court seems to be saying that notwithstanding "the pro-enforcement thrust of *Hanover Shoe*" the Court will construe section 4 as it pleases, and if Congress doesn't like the result the burden is on them to do something about it. At the very least this approach seems to be an inverted mode of statutory construction. In fact, there is little doubt that the Congress is indeed mightily displeased with the Court's imputation of intent. See Comment, *Mangano and Ultimate-Consumer Standing: The Misuse of the Hanover Doctrine*, 72 COLUM. L. REV. 394, 411 (1972).

175. See *Erickson*, *supra* note 76.

tial number of potentially injured persons merely because such a 'possibility' of multiple liability exists is far too drastic a measure to take."¹⁷⁶

VII. Conclusion

The *Illinois Brick* Court when proscribing the use of offensive passing-on, explicitly endorsed the concern expressed in *Hanover Shoe*:

The principal basis for the decision in *Hanover Shoe* was the Court's perception of the uncertainties and difficulties in analyzing price and output decisions "in the real economic world rather than an economist's hypothetical model," and of the costs to the judicial system and the efficient enforcement of the antitrust laws of attempting to reconstruct those decisions in the courtroom.¹⁷⁷

Section IV of this article addressed this concern. That section analyzed both the deterrent and compensatory consequences of the *Illinois Brick* decision, relying upon such assumptions as imputations of rationality to potential violators and their potential victims, and the tendency of firms when confronted with a cost increase to pass on that increase to their customers in the form of higher prices. The analysis of Section IV does not dispel all of the uncertainty connected with the trial of indirect purchaser treble damage claims, considering the methodological difficulties associated with the estimation of demand curves and price elasticities. The limited objective of that Section has been to produce a reasonably reliable formula which the courts can apply to determine the approximate magnitude of the harm inflicted by a price-fixing conspiracy on firms at successive links in a distribution chain. Although the formula is not as terse as might be desired, nor are all its ingredients amenable to a straightforward computation, it has the virtue of being independent of the implausible premises which the Court has deemed objectionable.

This article's analyses, including the derivations of formulae, have incorporated only those propositions of microeconomic theory which are general enough to be unobjectionable to the

176. *Boshes v. General Motors Corp.*, 59 F.R.D. 589, 596 (N.D. Ill. 1973).

177. *Illinois Brick Co. v. Illinois*, 431 U.S. at 732. (citations omitted).

mainstream of the economics profession. The justification for injecting economic theory into an analysis of antitrust policy has been cogently expressed by Professor Dewey:

The important issues in the control of monopoly are "economic" in the sense that judges and administrators are compelled to make decisions in the light of what they think the business world is "really" like, and it is the task of economists through research and reflection to provide them with an increasingly accurate picture.¹⁷⁸

Although Professor Dewey's observation speaks of the "control of monopoly," his admonitions apply equally to price-fixing behavior, which, economically speaking, is simply a particular manifestation of monopoly power. What price-fixing really amounts to is that a group of competitors agree to adopt a uniform pricing policy which, has exactly the same consequences to their customers as if those sellers had merged into a single monopoly.¹⁷⁹

The language of the *Illinois Brick* opinion reproduced above seems to imply that economists have not done much to accomplish the task which Dewey sets for them: to provide an increasingly accurate picture of what the business world is really like. This article has attempted to add color and dimension to such a picture through the use of an "economist's hypothetical model," notwithstanding the Supreme Court's apparent distaste for such devices. The ultimate justification for bringing theory to bear on real policy problems is the same in economics as it is in any of the physical sciences: The practical implications of naked "facts" are incomprehensible without a theory, no matter how imperfect it may be. This argument has been forcefully expressed:

The question of cost — of the proper weighing of competing values — is now the critical one for antitrust. The teachings of economic theory may not be determinative of the outcome, but they

178. D. DEWEY, *MONOPOLY IN ECONOMICS AND LAW*, Preface (1959).

179. In a case where the participants in a price-fixing conspiracy agree to adopt different price policies because they serve different customers, or different regional markets, this can be likened to a price-setting behavior of a so-called "discriminating monopolist." See W.J. BAUMOL, *ECONOMIC THEORY AND OPERATIONS ANALYSIS* 405-406 (1977).

are not irrelevant. Through the use of economic analysis, the costs of competing antitrust values can be identified with considerable accuracy.¹⁸⁰

The analytical portions of this article have applied standard tools of economic analysis to identify "competing antitrust values" in the cases where the courts are required to balance the interests of three parties: price-fixers, direct purchasers, and indirect purchasers. The theory developed methods which can be applied to reveal the approximate magnitudes of the tradeoffs imposed on litigants by *Illinois Brick* and *Hanover Shoe*. The formulae and theoretical conclusions may not be dispositive of the outcome in specific cases, but their contribution to the proper enforcement of the antitrust laws should not be ignored.

180. Kauper, *The "Warren Court" and the Antitrust Laws: Of Economics, Populism and Cynicism*, 67 MICH. L. REV. 334 (1969).

Appendix I

It will be observed that the pre-conspiracy profits of the direct purchaser share a common quality with his smaller post-conspiracy profits. This commonality is represented geometrically by the doubly cross-hatched rectangle $DEGP_1$. It follows that the injury suffered by the direct purchaser may be calculated after subtracting this common area from the two gross profit rectangles. This leaves the net profits enjoyed by the direct purchaser prior to the imposition of an unlawful overcharge as the L-shaped area identified by $ABCGED$. Likewise, the net profits enjoyed by the direct purchaser after he has adjusted his price and output in response to the unlawful overcharges is the rectangle P_1GFP_3 . The algebraic statements of these two quantities are given below.

$$\text{Pre-violation net profits} = (P_1 - MC_1) \cdot (Q_1 - Q_2) + (MC_2 - MC_1) \cdot Q_2$$

$$\text{Post-violation net profits} = (P_2 - P_1) \cdot Q_2$$

Damages sustained by the direct purchaser are the difference between his pre-violation net profits and his post-violation net profits. Algebraically this is stated as:

$$(1) \text{ Damages} = (P_1 - MC_1) \cdot (Q_1 - Q_2) + (MC_2 - MC_1) \cdot Q_2 - (P_2 - P_1) \cdot Q_2$$

Equation (1) can be rewritten to rearrange terms as:

$$(2) \text{ Damages} = (MC_2 - MC_1) \cdot Q_2 - (P_1 - MC_1) \cdot (Q_2 - Q_1) - (P_2 - P_1) \cdot Q_2$$

The slope of the demand curve between prices P_1 and P_2 is calculated at $dP/dQ = (P_2 - P_1) / (Q_2 - Q_1)$, and the price-elasticity of demand at the direct purchaser's post-violation price is calculated as $E_2 = (dQ/dP) \cdot (P_2/Q_2)$. These two relations are combined to enable us to substitute for the output differential effected by the direct purchaser:

$$(3) (Q_2 - Q_1) = E_2 (Q_2/P_2) \cdot (P_2 - P_1)$$

Recall that the unlawful overcharge is manifested as an increase in the marginal cost to the direct purchaser. (See discussion on pages 198-200 of text.) We have the relation:

$$(4) \quad MC_2 = (1+r_c) \cdot MC_1 \text{ implies } MC_2 - MC_1 = r_c MC_1$$

Substituting equations (3) and (4) for their counterparts in the damages equation (2) we have:

$$(5) \quad \text{Damages} = r_c MC_1 \cdot Q_2 - (P_1 - MC_1) E_2(Q_2/P_2) \cdot (P_2 - P_1) - (P_2 - P_1) \cdot Q_2$$

The symbol L_1 represents the Lerner Index of Monopoly Power (whose meaning is discussed in the text), evaluated at the pre-violation price/quantity configuration, or $L_1 = (P_1 - MC_1) / P_1$. Suppose, in order to simplify the notation, the percentage increase in the price charged by the direct purchaser is measured as r_p ; then $r_p = (P_2 - P_1) / P_1$. These two expressions are substituted into equation (5) with the result:

$$(6) \quad \text{Damages} = \left[r_c MC_1 - L_1 E_2 \left(\frac{r_p}{1+r_p} \right) P_1 - r_p P_1 \right] Q_2$$

The cost component of expression (6), namely MC_1 , may be replaced by its equivalent in terms of the Lerner Index $MC_1 = (1 - L_1) P_1$. This substitution will allow us the P_1 term to be factored out of the bracketed expression to yield:

$$(7) \quad \text{Damages} = \left[r_c(1 - L_1) - \left(\frac{L_1 E_2}{1+r_p} + 1 \right) \cdot r_p \right] P_1 Q_2$$

Lastly we recognize that the pre-violation price charged by the direct purchaser, P_1 , can be represented as $P_2 / (1+r_p)$ with the result that:

$$(8) \quad \text{Damages} = \left[r_c(1 - L_1) - \left(\frac{L_1 E_2}{1+r_p} + 1 \right) \cdot r_p \right] \frac{P_2 Q_2}{1+r_p}$$

Notice that the term $P_2 Q_2$ to the right of the bracketed expression is merely gross sales revenue enjoyed by the direct purchaser subsequent to his post-violation price/output adjustments. This can be symbolized as R_2 to yield the final expression in the test.

Appendix 2

Proof that a Profit-Maximizing Direct Purchaser will Pass-on to His Customers Half the Burden of His Cost Increase

Consider the case depicted in Figure 3 in which the demand

curve facing the direct purchaser is a straight line. Algebraically this is expressed as:

$$A2.1 \quad P = a - bQ$$

where Q is the quantity which will be demanded at a unit price of P , and a and b are parameters such that $a > 0$ and $b > 0$.

Prior to the effectuation of a price-fixing conspiracy the direct purchaser's marginal cost is MC_1 , a constant value for any level of production. It is depicted as a horizontal line in Figure 3.

The pre-violation profit function is written as:

$$A2.2 \quad \begin{aligned} \pi &= P \cdot Q - MC_1 \cdot Q = (a - bQ)Q - MC_1 \cdot Q \\ &= aQ - bQ^2 - MC_1Q \end{aligned}$$

Profit maximization requires $d\pi/dQ = 0$ which implies that the pre-violation profit maximizing level of output is $Q_1^* = (a - MC_1)/2b$ and the direct purchaser's profit maximizing price is $P_1^* = (a + MC_1)/2$.

After the direct purchaser's suppliers conspire to raise the price, he must pay them. The unlawful overcharge will be manifested as an increase in the direct purchaser's marginal cost curve from MC_1 to MC_2 as:

$$A2.3 \quad MC_2 = (1 + r_c) \cdot MC_1$$

r_c is the percentage increase in MC_1 resulting from the factor price increase engineered by the price-fixers. Thus the gross incremental burden imposed on the direct purchaser by the price fixers is calculated as $MC_2 - MC_1 = r_c \cdot MC_1$.

The post-violation profits function is written as:

$$A2.4 \quad \begin{aligned} \pi &= P \cdot Q - MC_2 \cdot Q = (a - bQ) \cdot Q - MC_1(1 + r_c) \cdot Q \\ &= aQ - bQ^2 - (MC_1 \cdot Q) \cdot (1 + r_c) \end{aligned}$$

If the direct purchaser consistently maximizes post-violation profits we must find the values of Q and P which satisfy the equation $d\pi/dQ = 0$. These values are $Q_2^* = [a - MC_1 \cdot (1 + r_c)]/2b$ and $P_2^* = [a + MC_1 \cdot (1 + r_c)]/2$ respectively.

Thus the difference between the direct purchaser's post-violation profit maximizing price and his pre-violation profit maximizing price is:

$$A2.5 \quad \begin{aligned} P_2^* - P_1^* &= \frac{a + MC_1(1 + r_c)}{2} - \frac{a + MC_1}{2} = \\ &= \frac{1}{2} (r_c MC_1) \quad Q.E.D. \end{aligned}$$

Appendix 3

Proof that the Policy of Cost-Plus Pricing, if Practiced by Firms at Adjacent Links in the Distribution Chain, Results in an Increase in the Price Elasticity of Demand as Markets Approach the Final Consumer.

The method of proof will be inductive. The proposition will be proven to be true for two arbitrarily chosen firms in a buyer/seller relationship. This proof will immediately motivate a general inference regarding the direction of change in price elasticity for all successive links which conform to cost-plus pricing behavior.

Consider firms at links 1, 2, and 3. Firms at 1 sell to firms at 2 who sell to firms at 3. Suppose the demand curve facing firms at 1 is written as:

$$A3.1 \quad P_1 = f_1(Q)$$

This demand curve is a symbolic expression of the willingness of firms at link 2 to purchase Q units of the output from the firms at link 1, if the unit price charged by the link 1 firms is P_1 . The law of demand states that in order for the quantity demanded to increase the unit price must decrease. This implies that $f_1' < 0$. Now consider the demand by the firms at link 3 for the output of firms at link 2. The demand is respectable as a function of the price charged by the link 2 firms after their output thusly:

$$A3.2 \quad P_2 = f_2(Q)$$

where $f_2' < 0$. The functional expression in A3.2 is read to mean that the firms at link 3 will want to purchase Q units from the firms at link 2 if the latter set a unit price of P_2 .

At this point the notion of cost-plus pricing is introduced. This is easily done by recognizing that the unit price paid by the link 2 firms to the link 1 firms is regarded by the link 2 firms as a component of their average cost. The principal cost-plus pricing is one in which the firm, acting in its capacity as a seller, determines a "markup" or "margin" which, when added to its average cost, determines the price to be charged by the firm. Symbolically, the price set by the link 2 firms for each unit of output sold to the link 3 firms is written as:

$$A3.3 \quad P_2 = P_1 + M$$

where M is the markup determined by the link 2 firms. Substituting the function expression A3.1 for P_1 into equation A3.3 we may derive the demand functioning facing the link 2 firms in terms of their demand functions f_2 :

$$\text{A3.4 } P_2 = f_2(Q) + M$$

Applying the well-known formula for price elasticity to the demand function of the link 2 firms results in:

$$\text{A3.5 } E_1 = \frac{dQ}{dP_1} \cdot \frac{P_1}{Q} = \frac{1}{f_2} \left(\frac{P_1}{Q} \right)$$

Applying the same formula to the demand function facing the link 2 firms there is:

$$\begin{aligned} \text{A3.6 } E_2 &= \frac{dQ}{dP_2} \cdot \left(\frac{P_2}{Q} \right) = \frac{1}{f_2} \cdot \frac{(P_1 + M)}{Q} \\ &= \frac{1}{f_2} \left(\frac{P_1}{Q} \right) + \frac{1}{f_2} \left(\frac{M}{Q} \right) \end{aligned}$$

Substitution of expression A3.5 into A3.6 becomes:

$$\text{A3.7 } E_2 = E_1 + 1/f_2 (M/Q)$$

Equation A3.7 is an expression signifying that the price elasticity of demand for the output of the link 2 firms, E_2 , is greater than the price elasticity of demand for the output of the link 1 firms, the discrepancy is solely attributable to the positive markup M which, by hypothesis, is invariant with respect to number of units sold.