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Comprehensive Models for Assessing Lost Profits to Antitrust Plaintiffs

Richard C. Hoyt, Dale C. Dahl,
and Stuart D. Gibson*

Courts have struggled for many years with estimating economic damages in antitrust cases. The objectives of this Article are to:

- (1) outline the evolution of the principal methods that the courts have used to measure damages to antitrust plaintiffs;
- (2) examine how courts have limited the applicability of the existing damage theories; and
- (3) propose extensions and consolidation of existing damage rules and methods of proof.

I. EXISTING DAMAGE THEORIES

Courts have emphasized three basic methods for computing damages suffered by antitrust plaintiffs. Two of these methods have been used for many years to measure damages in tort and contract cases, the oldest of which is the "before and after" approach.¹ To deal with the inadequacies of that theory, courts have applied the "yardstick" approach, which itself suffers from certain limitations. And recently, courts have accepted a third approach, the "market share" theory; but this, too, has its drawbacks.

A. BEFORE AND AFTER APPROACH

The "before and after" approach compares a plaintiff's profit situation in two distinct time periods, and uses his own business and its performance to make the calculations of lost profits. Generally, the plaintiff's profit position prior to the impact of the

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1. See 1 T. SEDGWICK, A TREATISE ON THE MEASURE OF DAMAGES §§ 182, 183 (8th ed. 1891).

antitrust violation is compared with his position during the impact.² There are, however, three possible variations to this approach, based on the time spans for which given sets of data are available.

First, profits (or sales) during the period of the impact may be compared with the same data for the period immediately following the impact. Judge Friendly outlined this approach in *Herman Schwabe, Inc. v. United Shoe Machinery Corp.*:³

Although, because of defendant's long domination of the market, plaintiff could not show how sales and profits once realized in a free market had diminished, no reason is seen why it could not have proceeded in the opposite direction, by showing how its sales and profits had waxed as United's unlawful practices had waned.⁴

Neither of the other two variations has been formally adopted by a court,⁵ but they are both logical outgrowths of the basic approach. First, profits earned prior to the period of impact of the antitrust violation and profits earned after the period of impact may, by interpolation, be used to calculate the profits that a plaintiff would have earned during the impact period absent the violation. Second, profits earned between the periods of impact of two distinct antitrust violations may be extrapolated to calculate the profits that a plaintiff would have earned absent the violations during the two distinct impact periods.⁶

Prior to *Central Coal and Coke Co. v. Hartman*,⁷ most courts took the position that profits earned by a business were so dependent on numerous and uncertain contingencies that they could not be proved with any reasonable degree of certainty.⁸ Thus, profits were not recoverable as damages. The court in *Hartman*, however, stated that

proof of the expenses and of the income of the business for a reasonable time anterior to and during the interruption charged, or of facts of equivalent import, is indispensable to a lawful judgment for damages for the loss of the . . . profits of an established business.⁹

Because the rule laid down in *Hartman* requires a plaintiff's

2. See generally, Parker, *Measuring Damages in Federal Treble Damage Actions*, 17 ANTITRUST BULL. 497 (1972).

3. 297 F.2d 906 (2d Cir. 1962).

4. *Id.* at 910.

5. See Parker, *supra* note 2, at 505-506.

6. *Id.*

7. 111 F. 96 (8th Cir. 1901).

8. *Id.* at 98.

9. *Id.* at 99.

business to be operating prior to the violation, it necessarily excludes calculation of profits from a new business, and profits to be earned in the future by a business. The language "facts of equivalent import," however, seems sufficiently open-ended to include at least some of the variations to the theory.¹⁰

The United States Supreme Court in two subsequent cases relaxed the plaintiff's burden of proof under the before and after theory, but these developments did little to overcome the inherent drawbacks of the approach itself. In *Eastman Kodak Co. v. Southern Photo Co.*,¹¹ the Court made it clear that since the defendant's wrongful conduct had made ascertainment of plaintiff's damages difficult, the defendant could not complain that the damage calculation was imprecise. Moreover, the Court permitted the plaintiff to calculate net profits by subtracting an estimated expense of doing business from an established pattern of gross profits. This meant that antitrust plaintiffs no longer had to prove their *actual* cost of doing business in order to recover damages.¹²

In *Story Parchment Co. v. Paterson Parchment Paper Co.*,¹³ the Court upheld the jury's finding that the measure of damages was the difference between what the plaintiff actually realized and what he would have received from sales at reasonable prices except for the unlawful acts of the defendant.¹⁴ The effect was that a plaintiff no longer had to prove the *actual* price at which the product would have sold, but could base his damages calculation on a *reasonable* price for the product.¹⁵

Despite the Supreme Court's relaxation of the before and after theory to ease the plaintiff's burden of proof on the issue of lost profits, use of the theory is strictly limited. First, the plaintiff's business must be one that is established and operating prior to the impact of the conspiracy to restrain trade. Thus, the theory is unavailable to a plaintiff who is prevented from entering a market because of the defendant's actions.¹⁶ Second, in order

10. See text accompanying notes 3-7 *supra*.

11. 273 U.S. 359 (1927).

12. The court in *Hartman* required the plaintiff to prove his actual cost of doing business. 111 F. at 99-103.

13. 282 U.S. 555 (1931).

14. *Id.* at 566-68.

15. The court in *Hartman* also required the plaintiff to prove the actual price at which his product would have sold. 111 F. at 99-103.

16. "He who is prevented from embarking in a new business can recover no profits, because there are no provable data of past business from which the fact that anticipated profits would have been realized can be legally deduced." *Id.* at 99.

to compare earning before and after the violation, not only must earnings have existed before the violation, but those earnings must have been reasonably uniform over time. Otherwise, a court applying the theory would not know which earnings to use for the "before" period, and the damage calculations would be too speculative.¹⁷

B. YARDSTICK THEORY

The second theory for proving lost profits in antitrust cases is the "yardstick" theory. While the before and after theory compares profit data for the plaintiff's business over two or more time periods, the yardstick theory compares the plaintiff's sales or profits during the period of impact of the antitrust violation to those of a similar company that was not adversely affected by the defendant's anticompetitive practices. The first attempt to use the yardstick theory was made in *Bigelow v. RKO Radio Pictures, Inc.*¹⁸ In addition to showing lost profits under the before and after theory, the plaintiff introduced evidence comparing the earnings of his theater with those of a competing theater that had benefited from the defendant's actions.¹⁹ The evidence established that the net receipts of the competitor for the period of impact exceeded the plaintiff's net receipts by \$116,000. The plaintiff's showing under the before and after theory was that its receipts fell off by \$125,000 during the same period. The Supreme Court did not find the two theories mutually exclusive. Affirming a verdict for the plaintiff based on the before and after theory,²⁰ the Court stated that it did "not imply that the verdict could not be supported on some other theory."²¹

Following the decision in *Bigelow*, courts adopted and developed the yardstick theory in a number of other cases. In

17. This limiting condition is implicit in Judge Sanborn's insistence in *Hartman* that calculation of lost profits be free of speculation, be based upon documentary evidence of an established business, and upon his approving quotation of a Minnesota supreme court case: "The value of such a business depends mainly on the ordinary profits derived from it. Such value cannot be ascertained without showing what the usual profits are." *Id.*, quoting *Goebel v. Hough*, 26 Minn. 252, 258, 2 N.W. 847, 849 (1879).

18. 327 U.S. 251 (1946).

19. Courts have since realized that it is improper to use such a firm as a yardstick. See text accompanying note 33 *infra*.

20. The jury found that the plaintiff suffered damages of \$120,000. 327 U.S. at 254.

21. *Id.* at 266.

William Goldman Theaters v. Loew's, Inc.,²² the trial court arrived at an estimate of damages by attributing the earnings of one of the defendant's nearby theaters to the plaintiff's theater and then subjectively adjusting that amount to account for the differences between the two theaters. In addition to considering the average gross income of the various theaters, the court admitted and considered evidence of the average profits of the theaters in question, although it stated that such evidence was not controlling.²³

Later courts modified the *Goldman* approach by refining the factor by which the two or more businesses are to be compared, making the damage computation more certain and thus easier to prove. In *Homewood Theatre, Inc. v. Loew's, Inc.*²⁴ the court focused on "net gross receipts," calculated by subtracting film rental costs from gross receipts.²⁵ In that case, the defendant's conduct limited the plaintiff to showing second-run movies. Despite the apparent loss of revenue from this change of status, the court recognized that a second-run theater would suffer no economic loss if the reduction in its gross receipts caused by the antitrust violation was less than the reduction in its film rental costs. And, reasoning that a second-run theater might have lower advertising costs than a first-run theater, the court in *Milwaukee Towne Corp. v. Loew's, Inc.*²⁶ calculated net gross receipts by subtracting advertising costs of each theater, as well as film cost, from gross receipts.

Although most of the cases in which the yardstick theory has been applied involved the motion picture industry, the same approach may be applicable in other areas. There are, however, four serious limitations to the use of this theory in other than the motion picture industry. First, the plaintiff's firm and the yardstick firm must be engaged in the same line of business. The law as applied in the theater cases, especially in *Homewood*,²⁷ suggests a very strict adherence to this criterion. But, while the two businesses must be in the same line of commerce, they need not be identical. The court in *Loew's, Inc. v. Cinema Amusements, Inc.*²⁸ stated that the differences between the base theater

22. 69 F. Supp. 103 (E.D. Pa. 1946), *aff'd*, 164 F.2d 1021 (3d Cir.), *cert. denied*, 334 U.S. 811 (1948).

23. *Id.* at 108.

24. 110 F. Supp. 398 (D. Minn. 1952).

25. "Gross receipts" refers to gross box office receipts. *Id.* at 415.

26. 190 F.2d 561 (7th Cir. 1951), *cert. denied*, 342 U.S. 909 (1952).

27. 110 F. Supp. 398 (D. Minn. 1952).

28. 210 F.2d 86 (10th Cir.), *cert. denied*, 347 U.S. 976 (1954).

and the plaintiff's theater went to the weight to be accorded the evidence and not to the admissibility of the evidence.

Second, not only must the two firms be engaged in the same business, but the yardstick firm must be operating within a market structure and under cost and demand conditions similar to those that the plaintiff would have faced absent the violation. This means that the yardstick theory cannot be used successfully if there is a wide disparity in the sizes of the firms in a market or if there is widespread product differentiation in the market, since these facts would be reflected in disparate cost and demand characteristics of the plaintiff and any potential yardstick firm. This limitation is illustrated by the refusal of the court to grant damages to the plaintiff in *Fargo Glass and Paint Co. v. Globe American Corp.*²⁹ In that case, the plaintiff was a wholesaler of gas ranges (in addition to other home appliances). Defendant Globe, a manufacturer of gas ranges, entered into a contract to sell its entire output to defendant Maytag, another wholesaler. The plaintiff claimed that the arrangement between Globe and Maytag violated the antitrust laws and tried to prove damages by comparing its profits with the profits of Maytag. The Seventh Circuit Court of Appeals stated that it could not award damages to the plaintiff when there was no evidence that the plaintiff would have sold as much as Maytag, or that it would have realized the same profit. In addition, there was no evidence in the record as to the plaintiff's and Maytag's comparative costs of doing business.

Third, the yardstick firm should also occupy a market position similar to the position the plaintiff would have held absent the violation.³⁰ If the plaintiff is among the dominant firms in the market, the yardstick firm must also be in that position. Similarly, if the plaintiff is a smaller, less dominant firm, so must the yardstick be. Even if the yardstick firm meets all the other criteria, the variance in profits attributable to market position³¹ suggests that an accurate damage calculation may not be possible absent a market position similar to that of the plaintiff.

Fourth, the defendant's firm can seldom be used as the yardstick firm. In addition to the problems recognized in *Fargo*

29. 201 F.2d 534 (7th Cir.), *cert. denied*, 345 U.S. 942 (1953).

30. Parker, *supra* note 2, at 511.

31. See Weiss, *Quantitative Studies of Industrial Organization*, in 1 *FRONTIERS OF QUANTITATIVE ECONOMICS* (M. Intriligator ed. 1971).

Paint,³² the basic flaw in the use of the defendant's business as a yardstick during the period of the impact of the antitrust violation is that

[i]t seems obvious that if the conspiracy benefited the defendant's business, such business does not represent profits made in a free and open market. The teaching of *Victor Talking Machine Co. v. Kemeny* [271 F. 810 (3rd Cir. 1921)] is that in measuring damages it is improper to use as a base business resulting from a violation. If any such evidence were permitted, it would have the effect of giving to the plaintiff the fruits of the conspiracy and then the resulting judgment would treble such a verdict. Where the defendant business is the only available "yardstick," before such evidence is admitted there should be deducted an appropriate amount for any increase resulting from the violation.³³

Thus, the yardstick theory, while useful in some situations, is of limited applicability in many others because to make the theory reliable, the above conditions must be met relating to firm size, market structure, and market position.³⁴

C. MARKET SHARE THEORY

The market share theory is the newest of the existing lost profits theories. This approach involves a comparison of relative changes in market shares of the plaintiff and the defendant. Damages are computed by translating the plaintiff's lost market share into a dollar volume of goods that he would have sold, which is then multiplied by the plaintiff's historical profit margin.

The first courts to use this theory developed it as an outgrowth of the before and after and the yardstick approaches. Although courts and plaintiffs often dealt with damages in the context of the existing theories, their actual application more closely resembled the market share theory. In *Richfield Oil*

32. See text accompanying notes 29-30 *supra*.

33. E. TIMBERLAKE, FEDERAL TREBLE DAMAGE ANTITRUST ACTIONS ¶ 21.12 at 332 (1965).

34. Another factor limiting the availability of the yardstick theory to antitrust plaintiffs is that if both the before and after theory and the yardstick theory apply, courts have generally tended to prefer the former. See, e.g., *Bigelow v. RKO Radio Pictures, Inc.*, 327 U.S. 251 (1946); *Theatre Inv. Co. v. RKO Radio Pictures, Inc.*, 72 F. Supp. 650 (W.D. Wash. 1947). The rationale for preferring the before and after theory seems to be that if a plaintiff has evidence of the actual loss he suffered, he should not be allowed to rely on more speculative evidence as to the profits he would have realized by comparing his business to a similar business.

Corp. v. Karseal Corp.,³⁵ the plaintiff tried to use the yardstick theory to show lost profits by comparing the sales of its firm with the sales of a base firm, the sales of which were traditionally one-third to one-seventh those of the plaintiff. In addition, the plaintiff showed that it was staffed, equipped, and able to produce a sufficient amount of its product to meet the additional sales. The plaintiff also introduced evidence showing its net profit per case of its product. The Ninth Circuit Court of Appeals, without elaborating, ruled that the jury was entitled to infer from such evidence that in the absence of the defendant's illegal conduct, the plaintiff would have sold three times as much of its product as the base firm did during the same period. Citing *Story Parchment*,³⁶ the court compared the uncertainty of the damage computation in that case to the uncertainty of a damage computation in a personal injury case: "There are many cases in which damages are allowed the element of uncertainty is at least equal to that in the present case—as, for example, copyright and trade mark cases, cases of unfair competition, and *many cases of personal injury . . .*"³⁷ The next major case in which this theory was applied was *Rangen, Inc. v. Sterling Nelson & Sons*.³⁸ There, a contractor was accused of obtaining certain contracts by bribing a state official. The evidence established that four firms had bid on the contracts in question and that the plaintiff and the other three firms had bid with approximately equal success on similar contracts in the past. The Ninth Circuit Court of Appeals computed the plaintiff's damages by calculating gross revenue from the business of one-fourth of the contracts and then multiplying that amount by the plaintiff's historical profit margin.

A similar calculation was made by the court-appointed master in the case of *Locklin v. Day-Glo Color Corp.*³⁹ The master computed the plaintiff's lost sales by multiplying the sales for the total market by the plaintiff's estimated share of the market absent the defendant's illegal activity and then by the plaintiff's profit margin. The plaintiff's profit rate was considered by the master to be between its actual rate for the impact period and the higher rate the plaintiff claimed it would have received absent the defendant's illegal action.

35. 271 F.2d 709 (9th Cir. 1959), *cert. denied*, 361 U.S. 961 (1960).

36. See notes 13-14 *supra* and accompanying text.

37. 271 F.2d at 715 (1931) (emphasis added).

38. 351 F.2d 851 (9th Cir. 1965), *cert. denied*, 383 U.S. 936 (1966).

39. 429 F.2d 873 (8th Cir. 1970), *cert. denied*, 400 U.S. 1020 (1971).

Subsequent to *Rangen*, a variation on the market share theory of proving damages was approved by the Eighth Circuit Court of Appeals in *Arthur Murray, Inc. v. Reserve Plan, Inc.*⁴⁰ In that case, the plaintiff, Reserve Plan, sold dance lessons, some of which were franchised by defendant Arthur Murray, Inc. Arthur Murray withdrew its franchise when the plaintiff refused to accept its financing plan. After finding the defendant in violation of the antitrust laws, the court appointed a special master to compute damages caused by the loss of the Arthur Murray franchise. The master first calculated from the evidence in the plaintiff's records that one-half of the plaintiff's business was attributable to the defendant. He then multiplied the plaintiff's total annual income by one-half, reflecting the fact that half of the plaintiff's business consisted of Arthur Murray accounts. Finally, the master subtracted from that figure the expenses attributable to the Arthur Murray portion of plaintiff's business (one-half of total expenses).

The United States Supreme Court first approved the market share theory in *Zenith Radio Corp. v. Hazeltine Research, Inc.*⁴¹ Zenith, sued by Hazeltine for patent infringement, counterclaimed under the antitrust laws, alleging that it was unlawfully excluded from competing with the plaintiff in Canada.⁴² The trial court awarded damages to Zenith, reasoning that Zenith had introduced evidence that indicated that but for the defendant's illegal conduct it would have achieved sixteen percent of the Canadian television market at the outset of and throughout the damage period.⁴³ The court computed the award by sub-

40. 406 F.2d 1138 (8th Cir. 1969).

41. 401 U.S. 321, *rehearing denied*, 401 U.S. 1015 (1971). Justice White aptly described the *Zenith* litigation as "marathon." *Id.* at 323. The trial court rendered its decision in 1965, 239 F. Supp. 51 (N.D. Ill. 1965). The court of appeals reversed, 388 F.2d 25 (7th Cir. 1967), and the Supreme Court in its turn reversed in part and affirmed in part, 395 U.S. 100 (1969). The court of appeals then reconsidered the matter, vacated the judgment, and remanded the case to the trial court, 418 F.2d 21 (7th Cir. 1969), but this decision was reversed by the Supreme Court, 401 U.S. 321 (1971). See text accompanying notes 42-45 *infra*.

42. Defendant also counterclaimed that it had been unlawfully excluded from competing with plaintiff in England and Australia. The trial court awarded Zenith damages based on its exclusion from these markets. 239 F. Supp. at 77-78. However, the Seventh Circuit reversed, holding that Zenith made no showing that plaintiff's conduct excluded it from the English and Australian markets. 388 F.2d at 36-37. The Supreme Court affirmed the Seventh Circuit's holding on this issue. 395 U.S. at 125-129.

43. Zenith introduced evidence as to the similarity of the Canadian and American television markets and that it had obtained between 15.6

tracting from the sixteen percent figure the three percent share of the Canadian television market actually obtained by Zenith. A similar determination was made for the Canadian radio market. On appeal, the Seventh Circuit Court of Appeals reversed the award to Zenith, holding that the fact that Zenith was able to show damages under the market share theory did not prove that damages were in fact suffered.

The Supreme Court affirmed the trial court, and, on remand, the Seventh Circuit stated that the measure of damages was the "difference between percentage share that defendant actually enjoyed during the damage period and the percentage it would have had as a free competitor."⁴⁴ The court, citing *Bigelow*, noted that Zenith's testimony as to the similarities between the Canadian and American markets was competent evidence by which the amount of damages could be reasonably approximated. The court stated, however, that some of the damages awarded by the trial court were based on actions of the plaintiff which occurred prior to 1959, the earliest date for which damages could be claimed under the four year statute of limitations and remanded the case to the trial court for a recomputation of Zenith's damages.

Zenith again appealed to the Supreme Court, which reversed the holding as to pre-1959 damages and set out certain standards to be used in determining whether damages should be awarded for lost future profits. The Court stated that losses occurring in the future are unrecoverable if the fact of their accrual is speculative or their amount and nature are unprovable.⁴⁵ Further, it held that the refusal by a court to award future damages on grounds that they are too speculative is equivalent to holding that no cause of action has arisen as to those damages. If and when they are suffered, they may then be sued upon within four years after the date on which they were inflicted. The Court thus reasoned that had Zenith sued for pre-1959 damages in 1954, determined by the appeals court as the time at which the cause of action on such damages had arisen, it would not have been able to show future injury with such reasonable certainty as to be awarded damages for the period of 1954-1959.⁴⁶

percent and 21.7 percent of the American television market during the impact period. 395 U.S. at 116.

44. 418 F.2d at 25.

45. 401 U.S. at 339.

46. One of the most recent cases to deal with the market share theory is *Heattransfer Corp. v. Volkswagenwerk A.G.* [1975-1] Trade

Although the market share theory has recently achieved acceptance as a method for proving lost profits, it suffers from several limitations. Extensive and complicated data are required to compute the actual damages suffered, as well as to lend support to the use of the theory at all. In order to make the calculations, at least four types of information are required: (1) a clear definition of the relevant market; (2) historical sales data on that market and on related markets; (3) economic history and trends of the relevant market; and (4) evidence of the plaintiff's ability to enter the relevant market.⁴⁷ If all the data needed for the calculations are not available, the plaintiff will be forced to assert many assumptions about the markets and firms involved. If these assumptions are unsupported by evidence, recovery can be precluded under the theory.⁴⁸

II. FOREGONE PROFITS AND FUTURE DISCOUNTED FUTURE PROFITS MODELS

A. INTRODUCTION

Each of the three antitrust damage theories thus far accepted by the courts can be applied to the limited circumstances for which they were developed. No single framework, however, has been developed that would be of use in calculating damages in a greater array of situations. The foregone profits and discounted future profits models proposed in this Article draw upon the existing approaches, but incorporate several theoretical extensions which make them applicable in any of the three following fact situations: (1) where a plaintiff has lost an exist-

Cas. 66,216 (S.D. Tex., April 25, 1975). The court there not only rejected the defendants' objections to the use of the market share theory, but also placed the burden on the defendants to show the method's unreliability.

[D]efendants argue that Method II should be disregarded because it is premised upon a "market share analysis", as opposed to one of the two more conventional approaches known as the "before-and-after" method or the "yardstick" method. Although these latter methods are more widely accepted, . . . they are not the exclusive methods in proving damages. . . . Defendants have failed to demonstrate that a market share analysis is inherently unreliable in proving damages. Accordingly, this Court will not hold that an antitrust plaintiff must be bound by convention in proving losses resulting from anti-trust violations.

Id. at 66,220.

47. See Gibbons, *The "Market Share" Theory of Damages in Private Enforcement Cases*, 18 ANTITRUST BULL. 743 (1973).

48. See, e.g., *Herman Schwabe, Inc. v. United Shoe Machinery Corp.*, 297 F.2d 906, 911-12 (2d Cir. 1962).

ing market share;⁴⁹ (2) where a plaintiff has been prevented from growing in a market as a result of a defendant's illegal acts;⁵⁰ and (3) where a plaintiff has been foreclosed from entering a market.⁵¹

The foregone profits and future discounted profits models allow measurement of impact in these three situations by utilizing time-observed firm entry, exit, and growth patterns. It is the incorporation of these dynamic concepts in the models that distinguishes them from the existing damage theories. As will be evident in subsequent discussion, the foregone profits models assume adequate and favorable response to three crucial economic questions: (1) what is the "rightful share" that the plaintiff would enjoy had it not been for the wrongful acts of the defendant; (2) what pattern of market entry and firm growth is appropriate to the situation under investigation; and (3) what definition and level of profit should be employed in estimating losses due to the antitrust violation.

B. THE FOREGONE PROFITS MODEL

1. *Loss of Existing Market Share*

The application of the foregone profits model to the first situation, a plaintiff's loss of an existing market share, is presented in Figure I.⁵² The point T_1 shows the date that the plaintiff entered the market under consideration. The distance from the horizontal line to point E indicates the actual market penetration. The line E - F denotes the increasing rate of market share that resulted until time period T_2 . Line F - G indicates the market share from the time that penetration was complete until the defendant's illegal practices began. The line G - D indicates the actual market share level that would have been sustained after market stabilization until the present time. (This level is assumed to be constant.) Thus, the distance from F to the horizontal axis represents the market share that was obtained and that

49. *E.g.*, *Poster Exchange, Inc. v. National Screen Corp.*, 431 F.2d 334 (5th Cir. 1970), *cert. denied*, 401 U.S. 912 (1971); *Arthur Murray, Inc. v. Reserve Plan, Inc.*, 506 F.2d 1138 (8th Cir. 1969).

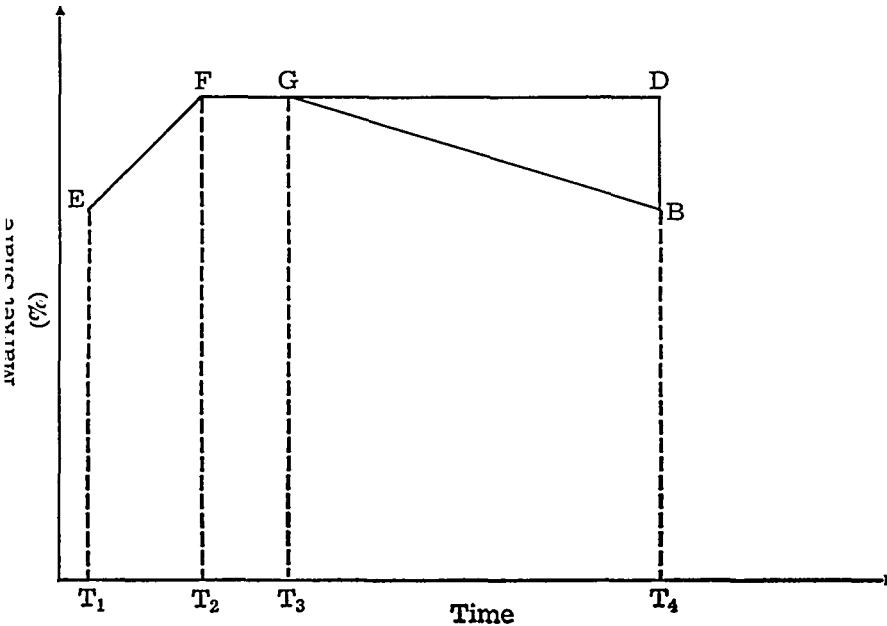
50. *E.g.*, *Locklin v. Day-Glo Color Corp.*, 429 F.2d 873 (8th Cir. 1970), *cert. denied*, 400 U.S. 1020 (1971).

51. *E.g.*, *P.D. Hays v. United Fireworks Mfg. Co.*, 420 F.2d 836 (9th Cir. 1969).

52. For ease and simplicity of presentation, Figures I, II, and III reflect linear relationships. Depending on the fact situation, however, curvilinear functions may be more appropriate.

reasonably could have been maintained by the plaintiff had it had full legal access to the market in question.

FIGURE I
FOREGONE PROFITS MODEL, LOST SHARE CASE



The line G - B indicates the plaintiff's actual loss of market share over the period of the impact of the violation (from T_3 to T_4). The vertical distance from the horizontal axis to any point on the line G - B represents the actual market share achieved. The percentage of market share represented by area GBD indicates the market share lost by the plaintiff. Foregone profits are estimated by multiplying the plaintiff's ordinary level of profit times sales and the foregone market percentages, represented by the triangle GBD.

The ability to ascertain full legal access to a particular market is tied to the economic theory that market conduct and performance will be influenced by the structure of the market. The question of what evolutionary patterns of concentration develop depends on the type of industry. New industries are

generally populated by a fairly large number of relatively small firms; however, as the industry matures, concentration increases. A single firm may gain a dominant market share, then yield to a few rivals so that three, four, or five firms emerge as an oligopolistic core supplying the majority of the industry output.⁵³ In another pattern of evolution, the level of concentration reached in the early maturity of the industry does not lessen as the industry matures. Where the dominant firm controls substantially all of the output from the very beginning, the evolutionary pattern follows generally two courses: the dominant firm increases and continues to dominate, or concentration decreases as a single firm monopoly gives way to a highly structured oligopoly.⁵⁴ Not all industries follow these patterns of evolution and concentration, and, as a result, numerous sub-patterns of changes in concentration can be identified.⁵⁵ For example, there is some empirical support for the belief that a firm's growth rate is independent of its size. This phenomenon is known as the law of proportionate effect, which generates a log normal distribution⁵⁶ of firm size where one or two firms are very large relative to the majority of firms in a given industry. Much effort has been made verify the log normal distribution theory in describing size distribution of firms.⁵⁷

Regardless of the evolutionary pattern, stable industries exhibit slow changes in seller concentration over time. While the proportion of the market supplied by the largest four to eight firms tends to be quite stable, the rank of relative market shares of these firms may shift.⁵⁸ This shifting of relative mar-

53. J. BAIN, *INDUSTRIAL ORGANIZATION* 161-63 (1967).

54. *Id.* at 162.

55. *Id.* at 163.

56. A log normal distribution is a highly skewed distribution where one or two firms are very large relative to the majority of firms.

57. See Hart & Prais, *The Analysis of Business Concentration*, J. ROYAL STATISTICS SOC'Y (1956); Hymer & Pashigian, *Firm Size and Rate of Growth*, 70 J. POLITICAL ECON. 556 (1962); Ijiri & Simon, *Business Firm Growth and Size*, 54 AM. ECON. REV. 77 (1964); Mansfield, *Entry, Gibrat's Law, Innovation, and the Growth of Firms*, 52 AM. ECON. REV. 1023 (1962); Silberman, *On Lognormality as a Summary Measure of Concentration*, 57 AM. ECON. REV. 807 (1967); Simon & Bonini, *The Size Distribution of Business Firms*, 48 AM. ECON. REV. 607 (1958).

58. A study based on the 1947 and 1958 Census of Manufacture, for example, shows that out of 204 selected industries, in only 38 were the four largest firms the same in both 1947 and 1958. In 25 cases, the size ranking of the "big four" had changed, and in 166 of the 204 industries, one or more of the big four of 1947 had been replaced by 1958 by previously smaller firms. See Collins & Preston, *The Size Structure of the Largest Industrial Firms 1909-1958*, 51 AM. ECON. REV. 986 (1961).

ket shares does not alter the mutual interdependence concept of oligopolistic structures, nor does it qualify the significance of the typical top level seller concentration. It does, however, stress that there apparently is an ever continuing rivalry for market share among the firms in an industry, even in those industries that are distinctly oligopolistic. Furthermore, it indicates that when applying the market share theory of damages, the researcher must take into consideration the indigenous barriers to entry that may cause changing market concentration.

Barriers to entry traditionally take one or more of several forms: (1) special legal sanction in the form of governmental regulations, patents, or tariff provisions; (2) absolute cost advantages existing in the short run in the form of input control; (3) managerial and technical know-how; (4) product differentiation; (5) tying arrangements; or (6) other economies to scale or size. Returning to Figure I, these barriers to entry should be reflected by the level of point E, with movement from E to F representing the ability of a particular firm to overcome the short-run indigenous barrier to entry. If a plaintiff attempts to prove damages by comparing the market performance of his product with that of a similar product, he must show that the actual entry and growth in the related market is similar with regard to production, marketing technique and firm capabilities. If market penetration was not possible because of illegal activities, industry experience of competitive but similar products should be used while taking into consideration the type of industry and its historical evolution.⁵⁹ Depending on the specific situation, it is generally possible to make an accurate judgment regarding entry, growth, and market potential. The share of a market that a plaintiff obtains also obviously depends on how the relevant product and geographic markets are defined, which is a function of the particular liability issues involved.

A critical aspect of the foregone profits model is the profit level that is used to estimate foregone profits. In most cases, the appropriate profit norm should be net profits before taxes, either as a percent of sales or on a per unit basis. Depending on the situation, defendant and/or plaintiff profits can be used as a norm. If defendant gross profits before taxes are to be used and are available, but net profits are not, gross profits can be multiplied by average industry conversion ratios between gross

59. See notes 45-47 *supra* and accompanying text.

profits and net profits before taxes⁶⁰ to calculate the profit rate to be used in the damage calculation. If defendant profits are not available in summary form, sales, prices, and costs may be used to arrive at net profits before taxes.⁶¹ If costs are not available, estimated profits and/or cost functions can be used.

In determining the appropriate profit level to use in estimating damages, the plaintiff's average profits over a number of years should be calculated. The problems generated by not doing so are illustrated in *Schwabe*,⁶² where the plaintiff used as a profit level the profits from just one year. The court rejected the profit rate as being abnormally high, given plaintiff's historical profit performance.⁶³

It is further desirable, if economies to scale exist,⁶⁴ to estimate long run total costs and total revenue functions so as to accurately account for the incremental profits stemming from foregone market shares. Not only is this procedure more accurate, but it also allows for a better understanding of any barriers to entry deriving from this phenomenon. These total costs and revenue functions should, however, be tested for their statistical significance and relevance as they pertain to the industry and the relevant geographic and product markets.

The primary thrust of the foregone profits model in the case described in Figure I follows the before and after approach outlined in *Bigelow*.⁶⁵ The only difference between the two approaches is that the court in *Bigelow* compared the plaintiff's *profits* before and after the impact of the antitrust violation, while the foregone profits model compares the plaintiff's *market share* before and after the impact of the violation.⁶⁶ Because of

60. These conversion ratio statistics are available from a variety of public sources, *FORTUNE* magazine and *MOODY'S*, for example, depending on the nature of the industry. They can also be derived from private data developed as a result of the lawsuit.

61. The formula is $PPS_t = (1 - \frac{AC_t}{P_t})$, where PPS_t = profits as a percent of sales; P_t = price per unit; AC_t = average cost per unit. This function derives from the typical profit function where gross profits equal revenues minus costs.

62. 297 F.2d 906 (2d Cir. 1962).

63. *Id.* at 911-912.

64. Economies to scale (or economies of mass production) imply a downward-sloping long run average total cost curve. As plant size increases, there is a concomitant decrease in cost of production per unit.

65. 327 U.S. 251 (1946). See text accompanying notes 18-21 *supra*.

66. As previously noted, the United States Supreme Court recently recognized comparison of market shares as an acceptable means of showing lost profits. See text accompanying notes 41-44 *supra*.

the relative market shares comparison, the foregone profits model allows damages to be measured without specifically accounting for external effects on the relevant market, such as inflation and supply shortages, since the model assumes an equal impact by such phenomena on all firms. This tends to eliminate conjecture that losses might have been occasioned by a general decline in the economy or by a decreasing demand for the relevant product.⁶⁷

In employing the concept of relative market shares in the foregone profits model, one must also be aware of legitimate economic forces that could cause a decline in the plaintiff's relative performance. Factors such as price competition, managerial acumen, and nonprice competition, in the form of advertising and product differentiation, can and generally do have an impact on market shares. Therefore, before attributing all foregone profits to illegal causes, those economic variables that could have a similar impact must be identified and evaluated accordingly.

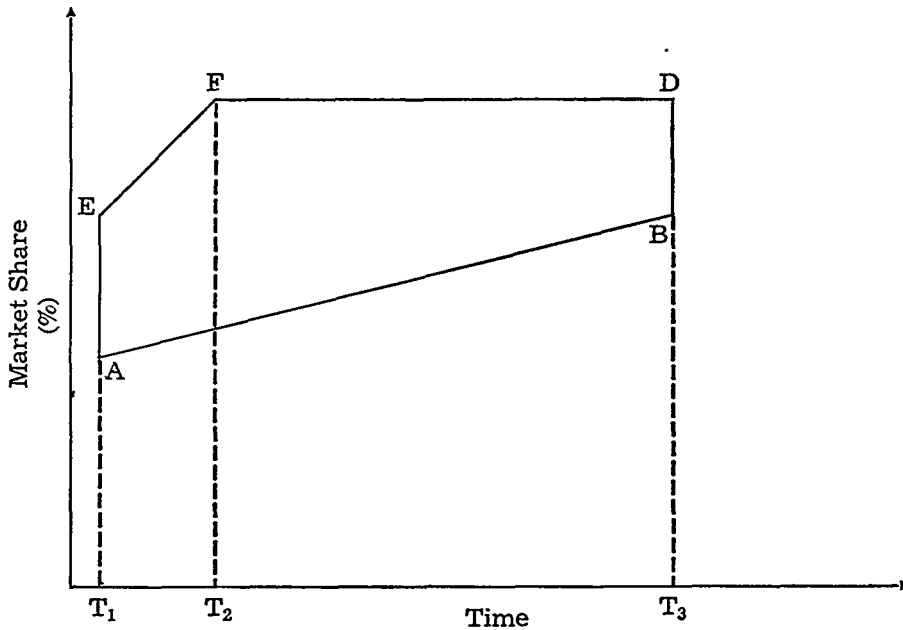
2. *Preclusion of Market Share Potential and Foreclosure from Market Entry*

The application of the foregone profits model to the situations where the plaintiff is prevented from growing in markets as he otherwise would have absent defendant's violation and where the plaintiff is totally foreclosed from entering the market are outlined in Figure II.

The point T_1 , by an extension of the line E - A to the horizontal axis, shows the date of entry that the plaintiff did enter or would have entered the market under consideration. The distance from the horizontal line to point A indicates the actual penetration by the plaintiff, if the plaintiff was able to penetrate the market in the face of the exclusionary practices of the defendant. The distance to E indicates the penetration that would have been realized but for the anticompetitive activities of the defendant. The line A - B indicates the rate of growth actually achieved by plaintiff in the relevant market up to the present time (T_3). The vertical distance from the horizontal axis to any point on the line A - B represents the market share that the plaintiff achieved in the relevant market in a particular instance.

67. Because of these features, the foregone profits model works to advance the goals of the antitrust laws, since its application makes it harder for antitrust offenders to go undetected and unpunished during periods of economic decline.

FIGURE II
 FOREGONE PROFITS MODEL, ENTRY CASE



In the situation where the plaintiff is actually foreclosed from entering the market, its actual market share of zero percent is represented by the horizontal axis $T_1 - T_3$. The line $E - F$ denotes the increasing rate of market share that would have resulted except for the predatory conduct by the defendant until time period T_2 . After T_2 , market shares are assumed to stabilize at a constant level. The line $F - D$ indicates the estimated market share level that would have been sustained by the plaintiff after the growth period and until the present time. Thus, the distance from F to the horizontal axis represents the market share that reasonably could have been obtained by the plaintiff had it had full legal access to the market in question. Where the plaintiff was able to penetrate the market to some extent, the percentage of market sales represented by the area bounded by $ABDFE$ represents the market share foregone by plaintiff over time. Estimation of foregone profits is made by multiplying the ordinary profit level of the plaintiff times sales and the foregone market

percentages represented by ABDFE.⁶⁸ In the case of a plaintiff foreclosed entirely from entry into the market, foregone market share is represented by the area bounded by T₁ T₃ DFE, and foregone profits are estimated by multiplying the ordinary profit level times sales and the foregone market percentages represented by T₁ T₃ DFE.⁶⁹

As might be expected, the calculation of lost profits in the situations outlined in Figure II is somewhat more speculative than that presented in Figure I. This is because actual data already exist for all points appearing in Figure I except G-D while the only existing data in Figure II relate to the position and slope of the line A-B. This does not mean, however, that a plaintiff is foreclosed from using the foregone profit theory in Figure II cases. The plaintiff simply must find other ways to determine the position of the critical points in Figure II. This can be accomplished by the use of two yardstick approaches. First, using its own business as a base, the plaintiff can compare its performance in the relevant market where its actual performance in related markets was unaffected by the defendant's anti-competitive practices. This was the approach adopted in *Zenith*.⁷⁰ Second, the plaintiff can use as a comparison another firm in the same relevant market, unaffected by the defendant's practices, to determine what market share it could reasonably have been expected to reach and maintain.⁷¹

In all cases, the plaintiff's damage calculations using the foregone profits model can be represented by the following formula:

$$TFP = \sum_{t=1}^n S_t \times P_t \times (M_t - R_t)$$

where

- TFP = total foregone profits
- S_t = total market size (\$) in period t
- P_t = profit potential (% of sales) in period t
- M_t = potential market share as percent of total market in period t
- R_t = actual market share as percent of total market in period t
- n = number of time periods (years, months) for which foregone profits are being estimated⁷²

68. This corresponds to the foregone market share represented by the triangle GBD in Figure 1. See discussion at pp. 1244-45 *supra*.

69. *Id.*

70. See text accompanying notes 41-46 *supra*.

71. Although this approach has yet to be applied by a court, its acceptance is suggested by general acceptance of the yardstick method.

72. Assume a pre-trial impact period of 2 years (n=2) and the following market conditions:

C. FUTURE DISCOUNTED PROFITS MODEL

The most recent Supreme Court statements on the recovery of future damages is contained in the second opinion of the Court in the *Zenith* case.⁷³ In that opinion, the Court recognized that anticompetitive activities will continue to adversely affect the market environment for the injured competitor for a period of time after the illegal acts have been terminated:

[E]ach separate cause of action that so accrues entitles the plaintiff to recover not only those damages which he has suffered at the rate of accrual, but also those which he will suffer in the future from the particular invasion, including what he has suffered during and will predictably suffer after trial Thus if a plaintiff feels the adverse impact of an antitrust conspiracy on a particular date, the cause of action immediately accrues to him to recover all damages incurred by that date and all provable damages that will flow in the future from the acts of the conspirators on that date.⁷⁴

The operative language in the above passage is "all provable damages." As noted earlier,⁷⁵ the Supreme Court indicated in the same opinion that the plaintiff may not recover future damages if their occurrence is speculative or if their amount and nature are unprovable. Thus, the question of future damages in the present case hinges on what is "provable." With this in mind, the future discounted profits model was developed as the next logical step in the proof of damages after the foregone profits model.

Reference is now made to Figure III where an additional segment, BDC, has been added to a combined version of Figures I and II. T_4 represents the present point in time, while T_5 represents the date in the future when the impact of the violation on the plaintiff will terminate. Thus, T_4 to T_5 represents the length of time that would be required for the plaintiff to regain its rightful share of the relevant market. In accordance with the yardstick approach,⁷⁶ the rate of growth indicated by B-C

S_1	=	\$1,000,000	S_2	=	\$1,200,000
P_1	=	20% (.20)	P_2	=	20% (.20)
M_1	=	10% (.10)	M_2	=	10% (.10)
R_1	=	5% (.05)	R_2	=	8% (.08)

The formula result is

TFP_1	=	\$10,000
TFP_2	=	\$ 4,800
TFP_{total}	=	\$14,800

73. 401 U.S. 321 (1971).

74. *Id.* at 338-39.

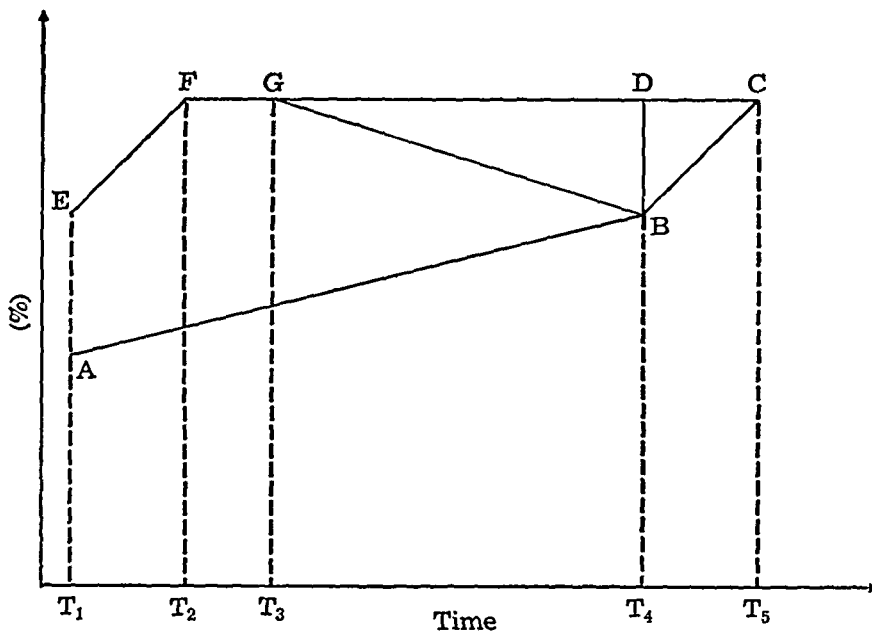
75. See text accompanying note 45 *supra*.

76. See text accompanying note 70 *supra*.

should be similar to the market entry rate $E-F$. Therefore, $B-C$ is parallel to $E-F$. The percentage of sales represented by the area bounded by BCD represents the market share that will be foregone in the future by the plaintiff. Calculation of future lost profits is made by multiplying the lost market share times projected market sales and the plaintiff's projected profit rate. These values are in turn discounted on a yearly basis to arrive at the present value of future damages.

FIGURE III

CONSOLIDATED FOREGONE PROFITS MODELS (FIGURES I & II)
AND FUTURE DISCOUNTED PROFITS MODEL



The primary advantage to this theory for proving lost future profits is that it requires the use of only three variables, each of which is determinable with reasonable certainty. The first variable is the time (T_4 to T_5) it will take the plaintiff to gain or regain its rightful share of the relevant market following cessation of the defendant's illegal practices. In some cases, the rate

of growth of market share can be determined by reference to the plaintiff's actual experience from T_1 to T_2 , assuming it entered the relevant market prior to the defendant's illegal conduct. In other cases, the yardstick approach can be used to determine the proper rate of growth of the plaintiff's market share. Once the rate of growth is known for each market, the calculation of the time period represented by T_4 to T_5 is simple.

The second variable is the plaintiff's projected rate of profit. This is determinable by reference to the plaintiff's historical profit rates in the relevant market and in related markets. If the plaintiff is denied entry into the market, profits earned by comparable yardstick firms may be used.

The final variable is the most uncertain of the three, but it is still ascertainable. This factor is the size of the relevant market in terms of total sales for each year from T_4 to T_5 and is determinable by two interconnected methods. One involves the use of a mathematical model of the market. First, the existing sales data for the market are plotted on a graph over time. From such a plot an equation can be fitted to the data by the use of regression analysis.⁷⁷ To arrive at the future size of the market, reference is made to the equation for the location of future points on the graph. Depending on the "fit" of the equation to the data, this method can produce an accurate picture of the size of the market at a given point in the future. This procedure assumes that the past is the best guide to the future. The second method involves the use of an expert witness, who is familiar with the industry in question, to estimate the future size of a given market. A procedure combining the mathematical objectivity of the first method with an expert opinion generally produces the most reliable results.

The generalized future discounted profits model can be represented by the following formula:

77. Regression analysis is a statistical procedure whereby an equation is fitted to an observed set of data by minimizing the sum of the deviations from a line described by the equation.

$$\text{TFDP} = \sum_{t'=n+1}^m \left[\frac{S_{t'} \times P_{t'} \times ((M_n - R_n) - (\alpha \times \beta))}{(1+r)^\beta} \right]$$

where

- TFDP = total present value of future discounted profits
 m = future time period when damages become zero
 t' = future time periods beyond n
 n = last time period for which foregone profits were calculated
 S_{t'} = future projected market size (\$) in period t'
 P_{t'} = future profit potential (% of sales) in period t'
 M_n = potential plaintiff's share of S_{t'}
 R_n = plaintiff's market share of geographic market at end of foregone profit period
 $\alpha = \frac{M_n - R_n}{(m - n)}$
 $\beta = (t' - n)$
 r = discount rate⁷⁸

D. CONCLUSION

The geometric and algebraic models presented here summarize the existing "before and after," "yardstick," and "market share" models used in assessing antitrust damages currently. But these models also suggest extensions of exciting usage to include market entry and firm growth and provide a computational framework that consolidates and highlights the central economic and legal determinations needed. These include: (1) what is the "rightful share" of a market by an injured competitor (potential or real); (2) what patterns of entry and growth are appropriate given variations in product and market conditions; and (3) what profit measure and data should be employed in computing the damages incurred.

The evolution of methods for measuring antitrust damages has been slow, but it has generally kept pace with the demands

78. Assume that the market returns to "normal" two years following judgment favorable to the plaintiff (u=2) and the following market conditions:

m	=	4	M _n	=	10% (.10)
t'	=	3	R _n	=	8% (.08)
n	=	2	α	=	.01
S ₀	=	\$1,500,000	r	=	6% (.06)
P ₀	=	20% (.20)			

The formula result is
 TFPD = \$2,830.19

of the courts. The foregone profits and future discounted profits models presented here build on the existing theories and are presented as a further step in the evolutionary process. They work to better effectuate the goal outlined by the Court in *Story Parchment*: "The constant tendency of the courts is to find some way in which damages can be awarded where a wrong has been done."⁷⁹

79. *Story Parchment Co. v. Paterson Parchment Paper Co.*, 282 U.S. 555, 565 (1931).