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# Oligopoly and the Antitrust Laws: A Suggested Approach

Richard A. Posner\*

This Article proposes for consideration a new approach<sup>1</sup> to a persistent and difficult problem of antitrust policy. The problem is: What rules and remedies are necessary to prevent supracompetitive prices in oligopolies, markets in which a few sellers account for most of the output? The heart of the suggested approach is a questioning of the prevailing view that monopoly pricing by oligopolists, when unaccompanied by any detectable acts of collusion, constitutes an economically and legally distinct problem requiring new doctrines and new remedies for its solution. The interdependence theory of oligopoly that underlies this view, in treating explicit and tacit collusion dichotomously, has obscured the similarities between the two kinds of anticompetitive behavior. I shall argue that both forms of collusion can be proceeded against under section 1 of the Sherman Act<sup>2</sup> as conspiracies in restraint of trade. The employment of section 1 against purely tacit collusion would do no violence to the statutory language or purpose; and while difficult problems of proof and of remedy would be involved, I am not convinced that they would be insuperable.

Part I of the Article summarizes the prevailing view in the economic and legal literature as to the distinctive character of the problem of oligopoly and notes the proposals to which this view has given rise; the focus is on the writings of Donald Turner, a distinguished scholar and former chief of the Antitrust Division. Part II explains my disagreement with Professor Turner's approach to suggests a reformulation of the problem of oligopoly that emphasizes the congruence between ordinary cartels, routinely dealt with under section 1 of the Sherman Act, and the special type of collusion that may arise under conditions of oligopoly. There are a number of serious problems in applying the statute to nonexpress collusion: the problems of establishing the requisite degree of agreement, of

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The suggested approach is a product of collaboration with Aaron Director, who, in addition, first suggested many of the ideas that are developed in it. I am also greatly indebted to George J. Stigler. I have drawn heavily not only on his published work in the field of industrial organization, but also on ideas suggested by him in conversation and on his helpful comments on an earlier draft. I also wish to thank the participants in the Industrial Organization Workshop of the University of Chicago, where an earlier version of the piece was given, for their helpful suggestions.

1. For an older proposal having a family resemblance see Conant, *Consciously Parallel Action in Restraint of Trade*, 38 MINN. L. REV. 797 (1954).

2. 15 U.S.C. § 1 (1964).

proving to the degree of certainty required by the courts that the defendants have tacitly colluded, and of eliminating violations once they have been proved; part III points out possible solutions to these problems. Part IV extends the analysis to some other approaches to the oligopoly problem, which differ from the section 1 approach in emphasizing the correction of market structure rather than behavior. Considered are proposed legislation that would authorize the dissolution of the leading firms in certain oligopolistic markets; a suggested interpretation of section 2 of the Sherman Act<sup>3</sup> to forbid "oligopolizing"; and the recent Department of Justice Merger Guidelines,<sup>4</sup> which strictly limit mergers that increase concentration.

### I. PROFESSOR TURNER ON THE INAPPLICABILITY OF SECTION 1 OF THE SHERMAN ACT TO OLIGOPOLISTIC INTERDEPENDENCE

The principal thesis of this Article is that section 1 of the Sherman Act, which prohibits "[e]very contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade," is an appropriate weapon to use against noncompetitive pricing in oligopolistic industries. That is not a popular view, partly because it is erroneously<sup>5</sup> thought to be foreclosed by the famous dictum in *Theatre Enterprises, Inc. v. Paramount Film Distributing Corp.* that "'conscious parallelism' has not yet read conspiracy out of the Sherman Act entirely,"<sup>6</sup> and partly because it was forcefully denounced in an article written by Donald Turner in 1962.<sup>7</sup> That article is a good place to begin discussion, although a rounded conception of Professor Turner's approach will require reference to some of his other writings as well.

At the heart of Turner's analysis is the theory of oligopolistic interdependence.<sup>8</sup> The theory will be examined critically at a later point; for now, a brief summary will suffice. In a market of many sellers the individual seller is too small for his decisions on pricing and output to affect the market price. He can sell all that he can produce at the market price, and nothing above it. He can shade the price without fear of retaliation because the resulting expansion of his output at the expense of his rivals will divert an imperceptible amount of business from each. For example, in a market

3. 15 U.S.C. § 2 (1964).

4. 1 TRADE REG. REP. ¶ 4430 (1968).

5. See text accompanying notes 42-44 *infra*.

6. 346 U.S. 537, 541 (1954).

7. Turner, *The Definition of Agreement Under the Sherman Act: Conscious Parallelism and Refusals To Deal*, 75 HARV. L. REV. 655 (1962).

8. See *id.* at 660-66. The economic literature expounding the interdependence theory is voluminous. Some places to begin are E. CHAMBERLIN, *THE THEORY OF MONOPOLISTIC COMPETITION* 30-55 (8th ed. 1962); W. FELLNER, *COMPETITION AMONG THE FEW* 3-50, 175-83 (1949); and Kaysen, *Collusion Under the Sherman Act*, 65 Q.J. ECON. 263 (1951). For a sense of the impression that the theory has made on judicial thinking in the antitrust field see *United States v. Philadelphia Nat'l Bank*, 374 U.S. 321, 363 (1963).

of 100 sellers of equal size, an expansion in output of 20 percent by one will result in a fall of output of only about 0.2 percent for each of the others. Under these conditions a seller will not worry about rivals' reactions in making his pricing decisions.

In contrast, in a market where sellers are few, a price reduction that produces a substantial expansion in the output of one will result in so substantial a contraction in the output of the others that they will quickly respond to the reduction. If, for example, there are three sellers of equal size in a market, a 20 percent expansion in the output of one will cause the output of each of the others to fall not by 0.2 percent but by 10 percent, a contraction the victims can hardly overlook. Anticipating a prompt reaction by his rivals that will quickly nullify his gains, the seller in a concentrated market will be less likely to initiate a price reduction than his counterpart in the atomized market. Oligopolists are thus "interdependent" in their pricing. They base their pricing decisions in part on anticipated reactions to them. The result is a tendency to avoid vigorous price competition.

Professor Turner asks whether oligopolistic interdependence should be viewed as a form of agreement to fix prices that violates section 1 of the Sherman Act. The question has two parts: Is interdependence agreement? If so is it unlawful agreement? Turner is prepared to allow that, "[c]onsidered purely as a problem in linguistic definition," interdependent pricing could be deemed a type of collusion.<sup>9</sup> But to him a more important consideration is that "the rational oligopolist is behaving in exactly the same way as is the rational seller in a competitively structured industry; he is simply taking another factor into account"<sup>10</sup> (the reactions of his rivals to any price cut) "which he has to take into account because the situation in which he finds himself puts it there."<sup>11</sup> Since the oligopolist is behaving just like the seller in an atomized market, oligopoly pricing can be described as "rational individual decision in the light of relevant economic facts" as well as it can be described as collusion.<sup>12</sup>

Turner's decisive argument is that there is no effective remedy, fairly to be implied from section 1, against oligopolistic interdependence. An injunction that merely "prohibited each defendant from taking into account the probable price decisions of his competitors in determining his own price or output" would "demand such irrational behavior that full compliance would be virtually impossible."<sup>13</sup> To be effective, the injunction would have to require that the defendants reduce price to marginal cost, and the enforcement of such a decree would involve the courts in a public-

9. Turner, *supra* note 7, at 665.

10. *Id.* at 665-66.

11. *Id.* at 666.

12. *Id.*

13. *Id.* at 669.

utility type of rate regulation for which they are ill equipped.<sup>14</sup> Dissolution of the guilty firms would be inappropriate in a section 1 context because

to fall back on this remedy is virtually to concede that the finding of liability on the ground of conspiracy is dubious at best. If effective and workable relief requires a radical structural reformation of the industry, this indicates that it was the structural situation, not the behavior of the industry members, which was fundamentally responsible for the unsatisfactory results.<sup>15</sup>

Oligopolistic interdependence, in short, is inherent in the structure of certain markets. Only semantically can it be equated with collusive price-fixing, for it is unresponsive to the remedies appropriate in price-fixing cases. How, then, to deal with the phenomenon? Professor Turner had suggested an answer to the question in *Antitrust Policy*, a book written in 1959 in collaboration with the distinguished economist Carl Kaysen: enact legislation to condemn "unreasonable market power" and to authorize the dissolution of firms found to possess it.<sup>16</sup> If the earlier book is set alongside the later article, however, the analysis is seen to be incomplete. *Antitrust Policy* correctly points out that the Supreme Court has never ruled that oligopolistic interdependence is a violation of antitrust law.<sup>17</sup> But it is a big step from this observation to the conclusion that new legislation is required to deal with the problem. It is always open to persuade the Supreme Court to revise its interpretation of existing law; and, to be realistic, it is much easier to sell novel doctrine in the antitrust field to the Court than to the Congress. (In fairness, it should be added that the Court's receptivity to novel antitrust doctrine is more apparent today than it was in 1959.) The Court would not even have to overrule a prior decision, for it has never been called upon to decide the legality of oligopolistic interdependence. The

14. *Id.* at 670.

15. *Id.* at 671. A conception of oligopoly quite similar to Turner's is basic to one of the recommendations (see note 83 *infra*) of the recently released *Report of the White House Task Force on Antitrust Policy* (July 5, 1968, mimeo.). As a succinct and lucid summary of the position that it is my main purpose in this Article to question, the relevant passage from the report deserves to be quoted in full: "[I]n markets with a very few firms effects equivalent to those of collusion may occur even in the absence of collusion. In a market with numerous firms, each having a small share, no single firm by its action alone can exert a significant influence over price and thus output will be carried to the point where each seller's marginal cost equals the market price. This level of output is optimal from the point of view of the economy as a whole.

"Under conditions of monopoly—with only a single seller in a market—the monopolist can increase his profits by restricting output and thus raising his price; accordingly, prices will tend to be above, and output correspondingly below, the optimum point. In an oligopoly market—one in which there is a small number of dominant sellers, each with a large market share—each must consider the effect of his output on the total market and the probable reactions of the other sellers to his decisions; the results of their combined decisions may approximate the profit-maximizing decisions of a monopolist. Not only does the small number of sellers facilitate agreement, but agreement in the ordinary sense may be unnecessary. Thus, phrases such as 'price leadership' or 'administered pricing' often do no more than describe behavior which is the inevitable result of structure. Under such conditions, it does not suffice for antitrust law to attempt to reach anticompetitive behavior; it cannot order the several firms to ignore each other's existence. The alternatives, other than accepting the undesirable economic consequences, are either regulation of price (and other decisions) or improving the competitive structure of the market." *Id.* at I-4 to I-5.

16. See C. KAYSEN & D. TURNER, *ANTITRUST POLICY* 110-19, 266-72 (1959).

17. *Id.* at 106-09.

1962 article explained why Turner believed that section 1 was not a suitable vehicle for an attack on oligopoly, but that left open the possibility of using section 2 of the Sherman Act (which forbids monopolization), as had been urged years before by Eugene Rostow.<sup>18</sup> In a very recent article Turner has endorsed that approach, arguing that section 2 can and should be interpreted to authorize the dissolution of leading firms in oligopolistic industries.<sup>19</sup>

In both *Antitrust Policy* and the Department of Justice Merger Guidelines, promulgated when he was chief of the Antitrust Division, Turner supported as a prophylactic against oligopoly a strict policy, founded on section 7 of the Clayton Act,<sup>20</sup> of limiting horizontal mergers.<sup>21</sup> Since mergers historically have been an important source of concentration, a strong antimerger policy should do much to prevent new oligopolies from emerging and loosely oligopolistic industries from becoming tightly oligopolistic. The extraordinary stringency of the Guidelines may reflect in part Turner's earlier expressed view that once a market has become highly concentrated there is little that can be done under existing law to prevent non-competitive, interdependent pricing.

## II. OF OLIGOPOLY, CARTELS, AND TACIT COLLUSION

### A.

Professor Turner's analysis of the problem of oligopoly and his conclusion that section 1 of the Sherman Act is not an apt vehicle for its solution depend critically on a theory of oligopoly behavior that, although widely accepted, is unsatisfactory in important respects. The crux of the theory is that sellers in a concentrated market will be reluctant to initiate price reductions because they know that, unlike in an atomized market, a reduction by one will have so large an impact on the sales of the others as to force a prompt matching price reduction, wiping out the first seller's advantage and leaving everyone worse off than before.<sup>22</sup> Among other deficiencies, this formulation conceals some crucial factual assumptions. One is that there will be no appreciable time lag between the initial price cut and the response. But there will be a lag if the price cut can be concealed or

18. Rostow, *The New Sherman Act: A Positive Instrument of Progress*, 14 U. CHI. L. REV. 567 (1947). See also Rostow, *Monopoly Under the Sherman Act: Power or Purpose?*, 43 ILL. L. REV. 745 (1949); Levy, *Some Thoughts on "Antitrust Policy" and the Antitrust Community*, 45 MINN. L. REV. 963 (1961).

19. Turner, *The Scope of Antitrust and Other Economic Regulatory Policies*, 82 HARV. L. REV. 1207, 1231 (1969).

20. 15 U.S.C. § 18 (1964).

21. See C. KAYSER & D. TURNER, *supra* note 16, at 132-33; Department of Justice Merger Guidelines, 1 TRADE REG. REP. ¶ 4430, at 6683-85 (1968).

22. I limit discussion of the effects of oligopoly in this Article to price competition. There are those who believe that oligopolists are prone to forgo other types of rivalry as well, but the evidentiary and theoretical underpinnings of this belief are as yet rudimentary. Cf. E. MANSFIELD, *THE ECONOMICS OF TECHNOLOGICAL CHANGE* 215-17 (1968).

if the other sellers are uncertain about the appropriate response and hesitate; and if a lag does occur, the price cut may pay even though it will eventually be matched. Similarly, if the other sellers cannot expand their output as rapidly as the first to meet the greater demand at the lower price, the first seller may improve his position even if the others meet his price reduction immediately. Lags in adjusting output to price changes must be quite common. Otherwise *any* price cut by a seller would, unless promptly matched, give him the whole market, regardless of the number of other sellers.

The interdependence theory also overstates the impact of one oligopolist's price reduction on the sales of the others. When a seller expands his output by lowering his price, only part of the additional output consists of sales diverted from his rivals. The rest consists of new sales to buyers who bought less or none of the product at the higher price. Depending on the elasticity of demand to price, then, much of the price cutter's new business may come from outside the market rather than from rivals. That will diminish the impact of the price cut upon them and so the likelihood of their responding immediately. The impact will also be diminished if the price cutter initially reduces price on only a portion of his output.

Moreover, the asserted distinction between atomized and concentrated markets with respect to price competition depends on a seemingly artificial convention. Different changes in output are compared, related only in that each represents the same percentage of each seller's previous output. It is true that if there are 100 sellers of equal size in a market having a total output of 1000 units and one increases his output by 2 units—20 percent—the effect on the remaining sellers will be slight. But were there only three sellers in the market (each the same size) and one increased his output by 2 units, the effect on his rivals would also be negligible, a 0.33 percent fall in output for each of them. To produce dramatic effects under oligopoly, a much larger expansion of output by the price cutter is required. Let the oligopolist in our example expand output by 20 percent of his previous output (67 units) and, true enough, his rivals will be hit so hard that they will want to respond. But if, on the other hand, the same market were unconcentrated, and a seller (or several sellers) increased output by 67 units, the remaining sellers would equally want to respond. The theory must assume, then, both that an individual seller can expand output by only a fraction of his previous output and that individual sellers in an atomistic market, unlike their counterparts in concentrated markets, will lack the foresight to realize that a price cut by several of them may have an aggregate impact on the remaining sellers so large as to provoke a prompt matching response by those sellers. These may be broadly correct assumptions, but they are more properly matters to be studied empirically than to be tacitly assumed.

A further difficulty arises from the emphasis that the theory places on price *reductions*. The supposed reluctance of oligopolists to reduce prices is cause for concern only if there is reason to believe that their prices are supracompetitive. The interdependence theory does not explain, however, how oligopolistic sellers establish a supracompetitive price. To be sure, if costs or demand in a market decline, a failure to reduce price may have the effect of transforming a previously competitive price into a monopolistic one. But, given inflation, a supracompetitive price level normally could not be maintained without occasional market-wide price increases. How are these effected? The answer given by adherents of the interdependence theory is "price leadership." Consider an atomistic market in which price is equal to cost (including in cost an allowance for a fair return to the investors). As the result of a series of mergers, the market becomes oligopolistic. One of the leading firms then raises its price. It knows that it will be unable to maintain a supracompetitive price if its rivals do not match the increase; but it relies (so the argument goes) on their having the good sense to realize that all would be better off at the higher price, a price that approaches what a single firm would charge if it had a monopoly of the market.

This reasoning may be plausible; at the same time it undermines the proposition that oligopolists will be reluctant to reduce prices. That proposition depends on each oligopolist's reasoning that if his rivals match his price reduction, everyone, himself included, will end up worse than before, because they will be at a lower price level. But why will that unhappy result not be prevented on the way down by an appropriate exercise of price leadership? If, in consequence of the first seller's price reduction, the market price begins to crumble, one would expect either he or another seller to raise price and the others to follow, restoring the previous price level. Anticipating this sequence, oligopolists should not hesitate to undertake price experiments. Each should reason: "If I reduce my price, and the others do not follow, I will have increased my profits. If they match my reduction, any lower price will soon turn unprofitable, but when that happens I can restore my price to the original level confident that the others will follow." There is of course the danger that one of the others, reasoning similarly, will not follow him back up, but will say to himself: "If I raise my price more slowly than the others, I can increase my profits at their expense; should they come back down to my price, it will be time enough to raise my price then, and they will follow." If sellers reason thus, price reductions may be a dangerous tactic after all. But, then, if such reasoning is common, it will be difficult for oligopolists to reach noncompetitive price levels in the first place. Each will be reluctant to exercise price leader-



ship knowing that the others will be tempted by the prospect of short-term gains at his expense to lag in following.

Further discussion is unnecessary to indicate my doubts that the interdependence theory of oligopoly provides an adequate explanation as to why prices in oligopolistic industries should exceed competitive levels. Nor need we pause to consider whether, by introducing the objections raised above as qualifications to the interdependence theory, it could be given a consistent and intelligible expression.<sup>23</sup> The relationship between the level of concentration in a market and the probability that pricing in that market will be noncompetitive can be elucidated in simpler and more fruitful terms than interdependence: in terms of the theory of cartels.<sup>24</sup>

### B.

Let us return to our market of 100 sellers of equal size. Despite the large number of firms in the market, they would be better off if the market price were somewhere above their cost—ideally, at the level that a single-firm monopolist of the market would price. It does not follow that they will agree to fix prices or that if they do the price level will in fact be altered significantly. Collusion is a rational and effective business strategy only if its returns exceed its costs. One of the factors that affects the returns from collusion is the elasticity to price of the demand for the market's product. If the demand is highly elastic the monopoly price will lie close to the competitive price and collusion will yield only modest returns. Another important factor is the condition of entry. A supracompetitive price will attract new entrants. Unless there are barriers to entry, or at least an appreciable time lag before a new firm can enter, the cartel will be in jeopardy from the very start. If new entrants are not admitted to the cartel the maintenance of a supracompetitive price will be impossible. If they are admitted the monopoly profits will have to be spread more thinly. There is the additional risk to be considered that, should the cartel eventually break down, the market will find itself with too many firms, leading to ferocious competition and many failures. A third important factor (discussed below under the costs of enforcing collusive agreements) relevant to the returns from collusion is whether and how long widespread cheating can be prevented.

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23. Competent expressions of the interdependence theory do qualify the simple view that I have been criticizing (see especially J. BAIN, *INDUSTRIAL ORGANIZATION* 304-48 (2d ed. 1968)), although not, in my opinion, adequately.

24. For good discussions of cartel theory see J. BAIN, *PRICE THEORY* 283-97 (1952); D. DEWEY, *MONOPOLY IN ECONOMICS AND LAW* 7-24 (1959); G. STIGLER, *THE THEORY OF PRICE* 230-38 (3d ed. 1966); McGee, *Ocean Freight Rate Conferences and the American Merchant Marine*, 27 *U. CHI. L. REV.* 191 (1960); Patinkin, *Multiple-Plant Firms, Cartels, and Imperfect Competition*, 61 *Q.J. ECON.* 173 (1947). For some case studies see L. MARLIO, *THE ALUMINUM CARTEL* (1947); G. STOCKING, *THE POTASH INDUSTRY* (1931). The treatment of oligopolistic pricing as a form of cartelization is implicit

The costs of collusion have two main components: coordination costs and enforcement costs.<sup>25</sup> Like any agreement, a price-fixing agreement requires bargaining among the parties, and bargaining is not costless. Moreover, once the initial price is fixed there must be a mechanism for changing it to adapt to changed conditions of cost and demand. Coordination costs are affected by the number of sellers whose actions must be coordinated and by differences in costs, product, and judgment among the sellers.

Once the agreement is in force, the parties must have effective means of assuring adherence to it. A price-fixing agreement raises acute problems of enforcement because each seller, by shading the agreed price, can increase his share of the monopoly profits. One might wonder why any seller would be so foolish and short-sighted as to cheat when he must know that cheating will lead to the breakdown of the cartel. Without assuming that any sellers are stupid, one can suggest a number of plausible reasons for expecting cheating to occur. A seller might cheat inadvertently, because of a mistake in computation or a failure of communication of the agreed price. He might have reason to believe that he could get away with cheating for quite a while and that his additional profits during that period would adequately compensate for the profits he would lose as a result of the eventual collapse of the agreement. He might cheat because he suspected that others were cheating. Or, a related point, he might cheat because he lacked confidence that the cartel would endure and saw no advantage in forgoing short-term gains for long-term gains unlikely to be realized. There is no a priori reason why sellers should yield to the various temptations to cheat, but there is abundant evidence that they commonly do.<sup>26</sup> To control cheating effectively, parties to price-fixing agreements may have to create elaborate machinery for the prevention, detection, and punishment of cheaters—joint sales agencies, systems for reporting transaction prices, penalties for cheating, and so forth. Such machinery is not costless, however, and in markets governed by the Sherman Act the most effective methods of achieving compliance with price-fixing agreements, such as joint sales agencies and legally enforced penalties for violations, are out of the question because they are illegal and cannot be concealed. The clandestine methods of enforcing cartels are much less effective.

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in G. STIGLER, *supra* at 219–20, and in Stigler, *A Theory of Oligopoly*, 72 J. POL. ECON. 44 (1964), reprinted in G. STIGLER, *THE ORGANIZATION OF INDUSTRY* 39 (1968).

25. Another category, which will not be discussed, consists of the costs of negotiating with, or repelling, new entrants. These can be viewed as enforcement costs.

26. See, e.g., P. MACAVOY, *THE ECONOMIC EFFECTS OF REGULATION: THE TRUNK-LINE RAILROAD CARTELS AND THE INTERSTATE COMMERCE COMMISSION BEFORE 1900* (1965), recounting the constant cheating that plagued the railroad cartels at a time when the Sherman Act prohibition against cartels had not yet crystallized. On the instability even of fully enforceable cartel agreements see Voigt, *German Experience With Cartels and Their Control During the Pre-War and Post-War Periods*, in *COMPETITION, CARTELS AND THEIR REGULATION* 169 (J. Miller ed. 1962). And for a contemporary example of recurrent cheating by members of a price-fixing scheme see Smith, *The Incredible Electrical Conspiracy*, FORTUNE, Apr. 1961, at 132, 170.

The point to be emphasized is that the attractiveness and feasibility of a price-fixing scheme to the sellers in a market are limited by the costs of bargaining to agreement and of enforcing the agreement to prevent cheating. And one way to view the price-fixing prohibition of section 1 of the Sherman Act is as a device for increasing the costs involved in establishing and maintaining noncompetitive prices. It is in this light that the relevance of oligopoly to pricing behavior emerges most clearly.<sup>27</sup> The analysis of bargaining and enforcement costs in other contexts indicates that they tend to rise sharply with the number of parties whose actions must be coordinated for a desired arrangement to emerge.<sup>28</sup> This experience can be transferred to the price-fixing context. In a market of many sellers the problems of bargaining to a mutually agreeable price and of preventing cheating are formidable. Substantial unanimity is necessary to a successful price-fixing scheme, and the larger a group the more difficult and costly it will be to achieve. In a market of many sellers there will be many points of view, some extremely recalcitrant individuals, many potential cheaters, and a vast number of transactions in which cheating could occur. The problems of obtaining and enforcing agreement become magnified to a point where a formal and elaborate machinery of coordination and implementation is bound to be necessary. But section 1 of the Sherman Act limits the parties to clandestine methods. It seems unlikely, in these circumstances, that price-fixing agreements will flourish in markets that have very many sellers.<sup>29</sup>

Oligopoly thus emerges as a necessary condition (in most cases) of successful price-fixing where the Sherman Act is applicable; that is the first implication of the analysis. But, equally important, it is not a sufficient condition. Much more is necessary to the disappearance of competitive pricing than the bare fact that there are only a few sellers in the market. To begin with, just as in the atomistic market, each seller must make a deliberate choice not to expand output to the point where the cost of the last unit of output equals the market price, or, if he is at that point, to reduce output. There is a real choice here. It is not irrational for an oligopolist to decide to set a price that approximates marginal cost. It is not an unprofitable point at which to sell (so long as cost is defined to

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27. In addition, however, the barriers to entry in a market of many sellers are likely to be trivial; in an oligopolistic market that had formidable barriers to entry the attractiveness of collusion would, other things being equal, be much greater. Another relationship between oligopoly and pricing is discussed in text following note 37 *infra*.

28. See, e.g., Demsetz, *Toward a Theory of Property Rights*, 57 AM. ECON. REV. PAPERS & PROCEEDINGS 347 (1967).

29. A recent study of criminal prosecutions under the antitrust laws (mostly price-fixing cases) found as much enforcement activity in relatively unconcentrated as in highly concentrated industries. See J. CLABAULT & J. BURTON, *SHERMAN ACT INDICTMENTS 1955-1965—A LEGAL AND ECONOMIC ANALYSIS* 128-44 (1966). However, the industry classifications employed are crude and in many instances do not describe relevant markets; the study contains no data from which one could infer how successful the efforts at price-fixing in the unconcentrated industries were; and, most important, the study provides no basis for estimating the amount of effectively concealed price-fixing in highly concentrated industries, where concealment should be more practicable.

include a sufficient profit to make production attractive to investors), and it may have definite attractions: if the oligopolist finds speculation about the probable reactions of his rivals as inconclusive as suggested in the earlier discussion of interdependence; if he believes that new entry or the competition of substitute products will prevent him from obtaining appreciable monopoly profits; if he distrusts his competitors and fears that any higher price would quickly be eroded by cheaters, placing him at a temporary disadvantage if he did not cheat; or if restricting output would lay him open to heavy punishment (more on that later).<sup>30</sup>

If each oligopolist in a particular market should decide to go for the approximate joint maximizing price, the problems of coordination and enforcement must still be faced. The sellers must have some method of getting to the maximizing price and, once arrived, of altering price as conditions of cost and demand change. There are several possibilities: actually meet together and decide on a price; each publicly announce what he thinks the right price is and why, and gradually all converge on a mutually acceptable price; or by express or tacit understanding designate one seller as the price leader whose moves the others will follow, relying on his judgment of market conditions. If the oligopolists have different costs or different judgments about demand conditions (including the effect of a higher price on entry), finding a mutually agreeable price may be impossible without (or even with) actual negotiation. If, moreover, freight, extras, quality differences, or other factors that produce deviations from a single basic price are common, causing transaction prices to vary, the sellers must arrive at an understanding on how these items will be computed. Otherwise they will be unable to determine when the agreed price is actually being charged or precisely what prices they should charge on the basis of the observed transaction prices of the price leader. Alternatively, the parties can attempt to standardize the product, but that will often be a highly unprofitable course of action.<sup>31</sup> Further, there must be adequate dissemination of the agreed price and of any price change lest the followers be caught by surprise by the leader's pricing changes or fail altogether to match them. Even when sellers are few, then, coordination is not a simple or costless process.

Nor does the condition of fewness eliminate the problem of cheating. Each seller has the same temptation to cheat as in a market of many sellers. Because of the constraints of the Sherman Act, colluding sellers cannot punish cheaters (at least not without compounding their antitrust violations). Probably the best they can do in most cases is to try to make cheating difficult to conceal, in the hope that its incidence will be reduced if the

30. See part III-C *infra*.

31. See Stigler, *A Theory of Oligopoly*, 72 J. POL. ECON. 44 (1964), reprinted in G. STIGLER, *THE ORGANIZATION OF INDUSTRY* 39 (1968).

gains are short-lived. But that is hard to do. The most efficacious means by which competitors can eliminate uncertainty as to each other's transaction prices, such as by an exchange of the terms of specific sales, have been condemned<sup>32</sup> and are difficult to implement covertly. Nor are these methods, even when practical, always effective. There is no assurance that the sellers will report their transaction prices accurately; the absence of any legal sanctions makes this an inviting area for fraud. Sellers may also find it possible, without fraud, to conceal price cutting through the practice of reciprocal buying. Critics of the practice tend to overlook the fact that it is an effective method of secret price cutting. Seller *X* sells product *A* to seller *Y* at list price, but then buys from *Y* product *B* on terms more favorable to *Y* than *Y* could command ordinarily. In effect, *X* is granting *Y* a discount on *A*, but in so roundabout a fashion that *X*'s competitors are unlikely to learn what is going on.

Short of direct knowledge of competitors' transaction prices, the most reliable method of determining whether the competition is cheating is by consulting one's own sales experience.<sup>33</sup> The fact that a seller's market share is declining while he is maintaining the agreed price may indicate cheating by others. But in many cases it will be an ambiguous indication. If the product is not a standard one the loss of sales may be the result of nonprice rather than price rivalry. If there are large buyers in the market a substantial contraction of market share may be the result of the defection of a single buyer, and it will be difficult to determine whether his defection represents an isolated piece of bad luck or was the result of price cutting. (One can of course ask the buyer why he switched, but if he says that it was because of a discount he may very well be lying in order to induce a larger discount from the inquirer.) If demand is growing, so that many sales are to buyers new to the market, it will be difficult for a seller to infer cheating from the fact that he is not getting a proportionate share of the new buyers; he has less reason to expect to attract any particular proportion of new buyers than to retain his old customers. The dilemma for the seller who sees his market share declining is that if cheating is not the cause he will be even worse off if he cuts price and thereby jeopardizes the cartel.

In enumerating the problems of coordination and enforcement that oligopolists bent on charging supracompetitive prices must overcome, I do not mean to imply that they are never solved, although few price-fixing conspiracies have come to light in which cheating was not rife and the benefits to the conspirators were enduring.<sup>34</sup> What the discussion does

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32. Most recently in *United States v. Container Corp. of America*, 393 U.S. 333 (1969).

33. See Stigler, *supra* note 31.

34. Admittedly, this is a biased sample. By definition, completely successful price-fixing conspiracies never come to light. Still, the repeated breakdown of the electrical conspiracy, see Smith, *supra*

imply is, first, that oligopolists cannot be presumed always or often to charge supracompetitive prices. Like atomistic sellers they must (with an exception shortly to be noted) collude in one fashion or another and the costs of collusion will frequently exceed the returns. Second, it seems improbable that prices could long be maintained above cost in a market, even a highly oligopolistic one, without *some* explicit acts of communication and implementation. One can, to be sure, specify an extreme case in which such acts might be unnecessary. No more than three sellers selling a completely standardized product to a multitude of buyers (none large) should be able to maintain the joint maximizing price without explicit collusion. However, not many industries resemble this model. More realistically, one might be concerned that purely tacit collusion would be attempted sufficiently often in highly oligopolistic industries to raise the long-run average price in those industries above the competitive level, even if collusion was highly imperfect and the average price substantially below the joint maximizing price. It is also possible that such formal machinery as is used by oligopolists to fix prices is often difficult to detect, at least with the certainty required in a legal proceeding and especially in a criminal one.

This is speculation. The theory of oligopoly advanced here, although useful in identifying relevant criteria, is not refined to the point where one can predict the markets in which price-fixing, with or without explicit (but covert) acts of collusion, is likely to be found. We need to know much more about the costs and returns of cartelizing than we do. Although a number of cross-sectional statistical studies have found a correlation between profitability and concentration,<sup>35</sup> the findings contain perplexing features<sup>36</sup> and in many studies the correlation is weak.<sup>37</sup> More to the point, assuming that the correlation is meaningful, we do not know whether or in what proportions it reflects purely tacit collusion, or explicit collusion successfully concealed, or perhaps other factors altogether.

One of the other factors that deserve specific mention is single-firm monopoly. It would be an error to suppose that a firm must control its market completely in order to have monopoly power. If a firm has a

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note 26, is a significant illustration of the difficulty of fixing prices even when the market is oligopolistic and the sellers establish elaborate collusive arrangements.

35. See Telser, *Some Determinants of the Returns to Manufacturing Industries* (Apr. 1969, mimeo.); N. COLLINS & L. PRESTON, *CONCENTRATION AND PRICE-COST MARGINS IN MANUFACTURING INDUSTRIES* (1968). The latter work contains a summary of earlier studies. *Id.* at 18-50.

36. See *id.* at 109; G. STIGLER, *supra* note 31, at 145-46. For example, the findings show a stronger correlation between concentration and profitability when gross census industry classifications are used than when more refined industry classifications are used, even though the latter are likelier to approximate relevant markets rather than purely arbitrary groupings.

37. See G. STIGLER, *supra* note 31, at 145 n.5. As Professor Stigler notes, "not more than one-half, and often less than one-fifth, of the variance of rates of return among industries is accounted for by differences in concentration." *Id.* at 145. It would be interesting to find out how much of the variation in profitability between concentrated and nonconcentrated industries is accounted for by the single most profitable firm in each of the concentrated industries. It is possible that the abnormal profits of such industries are to a significant degree a result not of collusion or interdependence but of the unusual efficiency—or, as explored in the next paragraph of text, market power—of one firm.

very large market share and its competitors cannot expand their output very rapidly, it may pay the firm to charge a supracompetitive price; its market share will erode, but only gradually. Nor is it always necessary that the firm have an overwhelming share of the market. Consider a market of two firms, each with a 50 percent market share. If marginal cost in that market rises with output, one firm can raise its price above its marginal cost secure in the knowledge that the competitor cannot take away its business by remaining at the former price; the competitor cannot supply additional output at that price. Although this is a case where price can rise above marginal cost without any element of cooperation between the sellers in a market, it can be viewed as a subcategory of the single-firm monopoly situation. Monopoly signifies the power to increase price above the competitive level without immediately losing one's entire trade to rivals; the two-firm example given above fits that definition. If the case has any counterparts in the real world they would be governed by the discussion later in this Article of appropriate antitrust policies toward single-firm monopolies.<sup>38</sup>

### III. SECTION 1 AND TACIT COLLUSION

To summarize the discussion at this point, the conventional formulation of the oligopoly problem, which holds that oligopolists are interdependent as to price and output, is inadequate. With the exception just noted, voluntary actions by the sellers are necessary to translate the bare condition of an oligopoly market into a situation of noncompetitive pricing. Perhaps in an extreme case no explicit acts of collusion or enforcement are necessary for this translation, only a tacit understanding on restricting output, and perhaps in a larger number of cases explicit acts are necessary but completely concealable. There is no need to distinguish these categories. Both can be considered forms of tacit collusion (or, synonymously, noncompetitive pricing by oligopolists), since that is how they would appear to a trier of fact. The essential point, in any event, is that tacit collusion thus defined is very like express collusion.

The major implication of viewing noncompetitive pricing by oligopolists as a form of collusion is that section 1 of the Sherman Act emerges as *prima facie* the appropriate remedy. There is, as we have seen, no vital difference between formal cartels and tacit collusive arrangements; the latter are simply easier to conceal. The purpose of section 1 is to deter collusion by increasing its costs; this suggests that the tacit colluder should be punished like the express colluder. And tacit collusion is voluntary behavior, which should be deterrable by appropriate punishment.

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38. See text accompanying notes 93-95 *infra*. The example given in the text is one version of the Edgeworth duopoly model. See F. MACHLUP, *THE ECONOMICS OF SELLERS' COMPETITION* 382 n.13 (1952).

These propositions will now be tested through an examination of the three major problems that the proposed employment of section 1 raises: an interpretive problem, of satisfying the jurisdictional requirement of section 1 that there be concerted action; an evidentiary problem, of proving collusion to the satisfaction of a court in a case where acts of collusion cannot be shown; and a remedial problem, of preventing violations of the suggested new rule.

### A. *The Problem of Concerted Action*

Since section 1 reaches only concerted activity—activity arising from a “contract, combination . . . , or conspiracy”—we must decide whether noncompetitive pricing by oligopolists can fairly be so classified when there is no proof that the oligopolists directly communicated with one another or took steps to enforce an understanding. The question will be considered at three levels: the level of semantics, the level of judicial precedent, and the level of statutory purpose.

The dictionary is no longer a fashionable aid to statutory interpretation, and for good reason: Context is vitally important. Nonetheless, an attempt to torture statutory language very far from accepted meanings does place the burden of explanation on the proponent of the interpretation. There is no distortion of accepted meanings, however, in viewing what I have termed tacit collusion as a form of concerted rather than unilateral activity. If seller *A* restricts his output in the expectation that *B* will do likewise, and *B* restricts his output in a like expectation, there is quite literally a meeting of the minds or mutual understanding even if there is no overt communication. In forbearing to seek short-term gains at each other's expense in order to reap monopoly benefits that only such mutual forbearance will allow, they are much like the parties to a “unilateral contract,” which is treated by the law as a contract rather than as individual behavior. If someone advertises in a newspaper that he will pay \$10 to the person who finds and returns his dog, anyone who meets the condition has an enforceable claim against him for the promised reward. The finder's action in complying with the specified condition is all the indication of assent that the law requires for a binding contract. Tacit collusion by oligopolists is at least analogous. A seller communicates his “offer” by restricting output, and the offer is “accepted” by the actions of his rivals in restricting their outputs as well.<sup>39</sup>

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39. The proposition that a belief in mental telepathy is not necessary to allow one to conclude that there may be a “meeting of the minds” without verbal interchanges has been illuminated by game theorists. The oligopoly “game” is an example of games “in which, though the element of conflict provides the dramatic interest, mutual dependence is part of the logical structure and demands some kind of collaboration or mutual accommodation—tacit, if not explicit—even if only in the avoidance of mutual disaster. These are also games in which, though secrecy may play a strategic role, there is



This analysis might well commend itself to the Supreme Court, which has frequently declared that section 1 does not require proof of express collusion.<sup>40</sup> None of the cases containing such declarations, to be sure, is quite like what is suggested here. In *Interstate Circuit, Inc. v. United States*,<sup>41</sup> a motion-picture exhibitor sent an identical letter to competing distributors asking them to maintain a certain minimum admission price on subsequent runs of their pictures. There was no evidence that the distributors ever communicated with one another with reference to this letter. Nonetheless, the Court upheld the finding that in observing the minimum price specified in the letter the distributors had engaged in a price-fixing conspiracy. Despite the absence of any overt communication, there had been a meeting of minds on the price to be charged and mutual forbearance to undercut the price; and this was deemed sufficient agreement or concert of action to satisfy the requirement of the statute. Unlike a pure case of tacit collusion, an agreement involving some actual communication among the distributors could in fact have been inferred from the evidence. But the Court's formulation of the elements of a section 1 conspiracy is easily broad enough to encompass oligopolists who are able without any overt communication to raise price and restrict output in anticipation that each will perceive the advantage of that course of action and adhere to it.

Nor was this formulation superseded by the dictum in the *Theatre Enterprises* opinion, quoted earlier, that "'conscious parallelism' has not yet read conspiracy out of the Sherman Act entirely."<sup>42</sup> As Professor Turner has pointed out, that was a case where the behavior of the rival firms was found to be consistent with an inference of perfectly independent pricing.<sup>43</sup> For reasons to appear shortly,<sup>44</sup> I prefer to illustrate the principle by a different set of facts. Suppose that there is a rise in the price of a raw material used in fabricating widgets. It would not be surprising if this led to a rise in the market price of widgets. If so, not only would every producer have raised his price, but each would know that the others had raised

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some essential need for the signaling of intentions and the meeting of minds. . . .

" . . . Whenever the communication structure [or the legal structure, one might add] does not permit players to divide the task ahead of time according to an explicit plan, it may not be easy to coordinate behavior in the course of the game. Players have to understand each other, to discover patterns of individual behavior that make each player's actions predictable to the other; they have to test each other for a shared sense of pattern or regularity . . . . They must communicate by hint and by suggestive behavior. Two vehicles trying to avoid collision, two people dancing together to unfamiliar music, or members of a guerrilla force that become separated in combat have to concert their intentions in this fashion, as do the applauding members of a concert audience, who must at some point 'agree' on whether to press for an encore or taper off together." T. SCHELLING, *THE STRATEGY OF CONFLICT* 83-85 (1960).

40. See, e.g., *United States v. Paramount Pictures, Inc.*, 334 U.S. 131, 142 (1948); *United States v. Masonite Corp.*, 316 U.S. 265, 275-76 (1942); *Interstate Circuit, Inc. v. United States*, 306 U.S. 208, 226-27 (1939); *Eastern States Retail Lumber Dealers' Ass'n v. United States*, 234 U.S. 600, 612 (1914).

41. 306 U.S. 208 (1939).

42. See note 6 *supra*.

43. Turner, *supra* note 7, at 658.

44. See text following note 57 *infra*.

their price. In this sense, their collective action in raising the price of widgets would be "consciously parallel." But no inference that the price rise was the result of an understanding to move from a competitive to a monopolistic price by contracting output could be drawn. One might, if he liked, say that the widget producers had acted in concert or even by agreement. But there was no agreement in restraint of trade, no interference with market forces. That is the essential teaching of *Theatre Enterprises*.

The suggested approach, finally, is consistent with the purposes of section 1. The statute is addressed to concerted activity because the evil against which the framers were legislating was the banding together of rivals, as in cartels or trusts, to extract monopoly profits by agreeing to end competition and charge the joint maximizing price.<sup>45</sup> Tacit collusion by oligopolists has the same character. It is a concert of firms for the purpose of charging monopoly prices and extracting monopoly profits.

Professor Rahl has argued that the requirement of proving actual agreement must be retained because the Sherman Act is a penal statute.<sup>46</sup> His argument is not that its penal character precludes a flexible interpretation—it is much too late in the day to make that argument about the Sherman Act—but that to dispense with the requirement of proving actual agreement would be "to imply criminality generally as to large enterprise in America."<sup>47</sup> This assumes, however, that noncompetitive pricing follows automatically from the condition of being an oligopolist, an assumption I reject. As explained earlier, tacit collusion or noncompetitive pricing is not inherent in an oligopolistic market structure but, like conventional cartelizing, requires additional, voluntary behavior by the sellers.

### B. *The Problem of Proof*

The biggest problem in applying section 1 of the Sherman Act to tacit collusion is that of proof: How can the existence of noncompetitive pricing be established without any proof of acts of agreement, implementation, or enforcement? Without denying that these will be extremely difficult cases, one can point to several types of evidence that should convince the trier of fact that sellers are guilty of tacit collusion as that term is used here.

The first is evidence that they practice systematic price discrimination. By price discrimination I mean a pattern of selling in which the ratio of price to marginal cost is not the same for all sales of a commodity.<sup>48</sup> Dis-

45. Any doubt that one of the major evils against which section 1 was aimed was the loose-knit combination or cartel is dispelled by Bork, *Legislative Intent and the Policy of the Sherman Act*, 9 J. LAW & ECON. 7, 21-24 (1966).

46. See Rahl, *Price Competition and the Price Fixing Rule—Preface and Perspective*, 57 NW. U.L. REV. 137, 147 (1962).

47. *Id.*

48. This is the economic definition of discrimination. It should be carefully distinguished from the usual legal definition, *i.e.*, any price difference. See Clayton Act § 2(a), *as amended*, 15 U.S.C. § 13(a) (1964); *FTC v. Anheuser-Busch, Inc.*, 363 U.S. 536, 549 (1960).

crimination in this sense cannot be systematically and persistently employed in a competitive market; competition will prevent sellers from extracting disproportionate returns in some transactions for long. Monopoly power is necessary for persistent discrimination, and in a market that has more than one major seller the usual source of such power is collusion, tacit or express. If the Government can prove systematic price discrimination, an inference of noncompetitive pricing should be drawn. One can object that such proof is an unsatisfactory ground on which to establish tacit collusion because it leaves the defendants free to continue colluding, save that they must fix a single monopoly price rather than discriminate. This point is valid to the extent that it implies that the decree in such a case should not be limited to abating the discrimination. The decree should forbid tacit collusion by any means, thus laying a predicate for prompt and severe punishment<sup>49</sup> should defendants comply only by ceasing to discriminate. But even if the decree had no effect beyond termination of discrimination, the proceeding would not have been wholly in vain. Discrimination enables a monopolist (or joint monopolists, in our case) to increase the profits from monopoly. To prevent discrimination by tacit colluders, therefore, is to reduce the returns to collusion and hence the incentive to engage in it.

One form of discrimination deserves separate attention. Because the costs and difficulty of coordination and enforcement are increased if transaction prices in the market vary considerably at every moment as a result of differences in freight, custom features, or other extras, colluding sellers may find it advantageous to agree on a highly simplified pricing system. Under such a system, prices will be discriminatorily uniform because they will fail to reflect fully the different costs associated with different sales; this will be additional evidence of collusion.

I do not suggest that proof of discrimination will present no problems. There will frequently be problems of characterization. Consider the practice of resort hotels in charging different rates for the same accommodations, depending on the time of year. That may seem a discriminatory practice, but it is not, at least in the sense used here. It is an example of peak-load pricing, which is fully consistent with competition.<sup>50</sup> Another problem in proving discrimination is that such proof requires a comparison of the marginal costs of the different sales, and cost determinations are fraught with practical and conceptual difficulties. But there is this saving grace: There should be no need actually to determine the marginal cost of any sale. It should be enough to determine the difference in marginal costs attributable to the different circumstances of the sales that are compared, and that should be a much easier task.

Another indication of noncompetitive pricing is a prolonged excess of

49. See notes 76-77 *infra* and accompanying text.

50. See Hirschleifer, *Peak Loads and Efficient Pricing: Comment*, 72 Q.J. ECON. 451 (1958).

capacity over demand. A movement from a competitive to a monopolistic price involves a contraction of output. A single-firm monopolist will reduce its capacity to a level appropriate to the reduced level of output. But because of the fragility of cartels, the members of a price-fixing conspiracy—tacitly colluding oligopolists in our case—may not reduce their capacity as their output contracts. They have no assurance that the reduced level of output will persist. Each must be prepared, if the cartel breaks down, to expand output promptly or lose position to its rivals.

Evidence of excess capacity is unlikely, however, to play a large role in cases under the new standard. Proof of the condition is very difficult. Moreover, if a cartel does function successfully, the parties should eventually be able to bring capacity into phase with their monopolistic level of output, perhaps by agreeing on the rate at which they will change capacity. In such a case there will be no evidence that present capacity is excess; any evidence will relate to a much earlier period. Furthermore, there are other causes of excess capacity besides noncompetitive pricing. The Government should be required, therefore, to prove a prolonged, rather than merely transient, condition of excess capacity, and defendants should be permitted to rebut by showing that the condition had an innocent cause.

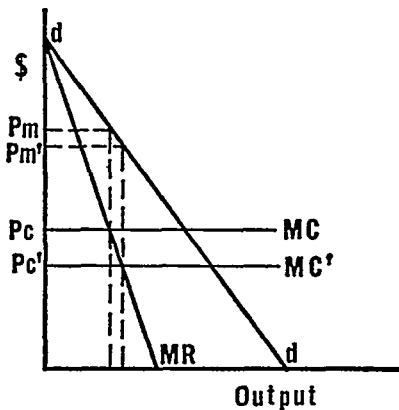
A potentially important class of evidence relates to changes in the market price. In general, the prices of noncompeting sellers should change less frequently than the prices of competing firms. The difficulty involved in arriving at a mutually agreeable price counsels for infrequent redeterminations; in addition, the opportunities to cheat are increased by frequent market-price changes. One would also expect cost changes to affect the market price proportionately less in a noncompetitive than in a competitive market. To illustrate, if a widget costs 10 cents to produce (regardless of quantity), under competition the price will be 10 cents. But suppose that, by colluding, the sellers are able to raise the price to 16 cents. If the cost of producing a widget now declines by 2 cents, the price will fall by 12.5 percent even if the sellers pass the entire cost reduction to the purchaser, whereas if the market were at the competitive price the same cost reduction would lead to a 20 percent price reduction. Moreover, colluding sellers will in some cases be able to appropriate the greater part of any cost savings as additional profit and pass less of the savings to the purchaser—reduce price less—than would competing firms.<sup>51</sup>

I am not suggesting that a direct comparison of costs between a competitive market and one suspected of being noncompetitive be attempted, but only that in some cases it may be possible, by a comparison with pricing

51. This point may be illustrated graphically. In Figure 1, a reduction in cost from  $MC$  to  $MC'$  will lead to a reduction of the competitive price from  $P_c$  to  $P_c'$  and of the monopoly price from  $P_m$  to  $P_m'$ ; as is evident, the monopoly price falls less, not only as a percentage of the former price but absolutely.

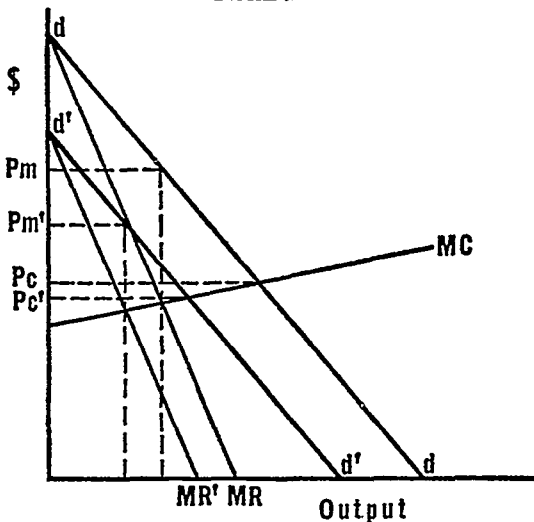
behavior in other markets, to infer collusive behavior from the lesser frequency and smaller amplitude of price changes in the market under scrutiny. Some words of caution are necessary here, however. First, a technical point but an important one, the effect under discussion is certain to occur only if the cost and demand functions of the firms are linear, and they may not be. Second, the effect may be offset by the tendency under monopoly to alter price more when demand shifts than would competitive firms.<sup>52</sup> Third, meaningful inferences can be drawn only from the actual transaction prices in the market, which may be different from the list prices. Rigid list prices do not prove collusion if transaction prices depart substan-

FIGURE 1



52. Figure 2 illustrates this point. When demand shifts from  $dd$  to  $dd'$ , the monopoly price falls from  $Pm$  to  $Pm'$ , a greater distance than from  $Pc$  to  $Pc'$ . I have assumed in the example that marginal costs rise with output; if they are constant, as of course they may be in an actual case, price will not fall at all under competition, although it will fall under monopoly.

FIGURE 2



tially from list. The Government should be able to obtain representative transaction prices from buyers. If this seems too onerous a burden to place on the Government, the rule might be to permit the Government to base inferences on list prices, while allowing defendants to rebut by showing that many sales were not at list.

Two other kinds of evidence of tacit collusion that will require delicate handling are abnormal profits and price leadership. It would be a mistake for courts to emulate public-utility commissions and attempt to determine the reasonable or competitive price in a market where tacit collusion was alleged. All other considerations aside, it would extend section 1 proceedings inordinately to undertake a valuation of the defendants' assets and a thorough review of their costs—two fearfully complicated and laborious steps in the determination of reasonable price. But there may be some cases where price is so out of line with any reasonable estimate of capital and operating costs that persistent abnormal profits can be demonstrated without a full public-utility type of inquiry and where no inference other than collusion (such as persistent success at innovation) is possible. Evidence relating to profits should therefore not be ruled out entirely. A nice question is whether defendants should be allowed to rebut a showing of tacit collusion based on other evidence by proof that they did not enjoy any monopoly profits. Since it is quite possible that the members of a cartel, due to entry of new firms into the market, will not have substantial monopoly profits at the monopoly price, the answer should be no.

The problem with price leadership is not that it is difficult to establish but that its significance is equivocal. It is true that colluding sellers may find it necessary to agree on a price leader. On the other hand, price leadership may emerge in a market simply because one of the firms is thought to have good judgment of market conditions and the others regularly defer to it. Still, there may be some cases where price leadership is so uniform and long-continued as to warrant an inference of tacit collusion.

Some of the more traditional methods of proving collusion circumstantially should also be useful in proving tacit collusion. One such method is by showing that the defendants have had fixed market shares for a substantial period of time; another, that they filed identical sealed bids on nonstandard items. Among other indicia of tacit collusion, I shall mention in closing just three: refusal to offer discounts in the face of substantial excess capacity; the announcement of price increases far in advance, without legitimate business justification for so doing; and public statements as to what a seller considers the right price for the industry to maintain. When a seller has substantial excess capacity, the pressure to cut prices is strong, because the cost of utilizing idle capacity will be

only a fraction of the usual cost of production. For sellers in these circumstances to refuse to reduce price suggests collusion. The practices of announcing price increases long in advance, and of discussing publicly what is the right price for the industry (not the individual firm), are methods of indirect communication by which sellers iron out possible differences among them and arrive at the mutually agreeable price. Evidence relating to public discussion or announcements of price increases will usually not be sufficient by itself, but together with evidence of the actual pricing of the industry members could provide convincing support for an inference of tacit collusion.

Clearly, the kinds of evidence that would be admissible in a tacit-collusion case cover a wide spectrum. These would inevitably be "big" cases. But the scope of permissible inquiry would not be unlimited, and should not be unmanageable. Unlike proceedings under Kaysen and Turner's "unreasonable market power" standard, in which the Government would be required to adduce a variety of evidence concerning the structural features (for example, market shares and condition of entry) and performance characteristics (for example, technical efficiency) of the market in question,<sup>53</sup> I would limit inquiry by and large to conduct—how the firms behave—and more narrowly still to conduct from which an absence of effective competition can be inferred: cartel-like conduct. The more serious problem is whether it will be possible, given the limitations of economic science and of judicial fact-finding processes, to prove, by the kinds of evidence enumerated above, that firms have been guilty of noncompetitive pricing. While it is true that such evidence is not entirely alien to Sherman Act proceedings,<sup>54</sup> the record of the courts, as we are about to see, has not been one to inspire confidence in their ability to handle economic evidence. Before elaborating this point, may I point out that the workability of the proposed standard could be improved if a substantial research effort in the area of cartel and oligopoly behavior were undertaken. Despite decades of intense concern with pricing under oligopoly, we know little about which industries in fact exhibit noncompetitive pricing and what patterns of price leadership, price rigidity, market-share stability, and other market phenomena connote collusion. This deficiency should be remediable, although it will require not only scholarly attention but also the cooperation of the government agencies that have the necessary fact-gathering

53. See C. KAYSEN & D. TURNER, *supra* note 16, at 112-13. But cf. *id.* at 267-68.

54. See, e.g., *American Tobacco Co. v. United States*, 328 U.S. 781 (1946) (discussed in text following note 58 *infra*); *C-O-Two Fire Equip. Co. v. United States*, 197 F.2d 489 (9th Cir.), *cert. denied*, 344 U.S. 892 (1952); *United States v. Aluminum Co. of America*, 148 F.2d 416 (2d Cir. 1945). For an example of how an economic study can shed light on whether a market is behaving competitively see 2 J. BAIN, *THE ECONOMICS OF THE PACIFIC COAST PETROLEUM INDUSTRY* 330-60 (1945). For an excellent recent case study of how sophisticated economic evidence can be used in antitrust litigation see Lozowick, Steiner & Miller, *Law and Quantitative Multivariate Analysis: An Encounter*, 66 MICH. L. REV. 1641 (1968).

powers and functions, such as the Bureau of the Census and the Federal Trade Commission.

Pending this improvement in knowledge, courts will have to exercise extreme care in drawing inferences of tacit collusion from market conduct. The pitfalls that abound in this area are illustrated by Professor Turner's discussion of the *Theatre Enterprises* and *American Tobacco* cases in his 1962 article. In the former case,<sup>55</sup> the owner of a suburban theater tried to purchase rights to first-run movies from several producer-distributors and was turned down by each. Professor Turner notes that "there was . . . a great deal of testimony by defendants to the effect that the decision of each was an independent one, based on purely individual considerations,"<sup>56</sup> and concludes that the case "was one in which it would have been absurd to direct a verdict on the ground that consciously parallel action clearly showed agreement."<sup>57</sup> I am more troubled by the case. The practice of selling the right to exhibit a film at two prices, a higher price for immediate exhibition ("first runs") and a lower price for later exhibition, would appear to be a form of price discrimination. The cost to the distributor is the same regardless of when the film is to be exhibited, but a two-price system enables him to exploit the willingness of some moviegoers to pay a premium to see a film when it is first released. As noted earlier, systematic price discrimination cannot persist for long under competition. If, therefore, one assumes, as has the Court in all of the movie cases, that the distributors are in competition with each other—are selling close substitutes even though their films are copyrighted and in that sense unique—the refusal of any distributor to sell first runs to the plaintiff in *Theatre Enterprises* is difficult to understand other than in a context of collusive behavior.

The distributors, it is true, expressed concern that the plaintiff would be in competition with their existing first-run theaters; but this only underscores their reluctance to spoil the higher-priced market by freely granting first-run rights. And, although they expressed skepticism as to the plaintiff's ability to pay first-run prices, there was no suggestion that any distributor would not have made money doing business with plaintiff. The distributors testified that their films would receive greater "exposure" by being shown in downtown theaters first, but one would think that maximum exposure would be promoted rather than impaired by licensing additional first-run theaters; it is especially difficult to understand how a two-price system fosters exposure. The inference that the refusal was motivated by fear that an expansion in the number of first-run theaters would endanger the defendants' discriminatory system of film distribu-

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55. *Theatre Enterprises, Inc. v. Paramount Film Distrib. Corp.*, 346 U.S. 537 (1954).

56. Turner, *supra* note 7, at 657.

57. *Id.* at 658.



tion seems, in the circumstances, the most plausible, although I do not consider the evidence for this interpretation conclusive. Here, incidentally, is a case where purely tacit collusion was quite feasible. A distributor could not have concealed the grant of first-run status to the plaintiff. Competing distributors would have found out what had happened as soon as they read the theater page.

*American Tobacco Co. v. United States*<sup>58</sup> is a case that Turner views as a classic example of noncompetitive behavior under oligopoly:

[T]he Government charged that the three leading cigarette manufacturers had, among other things, conspired to fix prices in the sale of their cigarettes. The Government's evidence on this aspect of the case consisted chiefly of economic facts, including the following. All three companies charged identical prices for their cigarettes from 1928 to 1940. In this period, there were only seven price changes. A price change initiated by one company would be almost immediately followed by the other two, who refused to make further sales to dealers until their corresponding price changes were made effective. The three companies substantially raised their prices in 1931, though their costs were declining and there was a general depression. This led to a substantial increase in their profits for a period of time, even though their total sales declined as some consumers switched to the cheap "ten cent" brands. In 1931, at the time of the price increase, the three large companies together accounted for ninety per cent of all cigarette sales.

Any economist worthy of the name would immediately brand this price behavior as noncompetitive. One can hardly find clearer evidence of an absence of effective competition than an increase of prices in the face of declining costs and weakening demand.<sup>59</sup>

I consider the evidence recited by Turner more equivocal. The fact that the three leading cigarette manufacturers charged identical prices for 12 years would indicate a suspicious rigidity and uniformity of prices if these were transaction prices. But they were list prices, and identity of list prices in an industry with only three major sellers, selling a standard product, is unsurprising, as are the facts that list prices were changed infrequently and that a change in list price by one was matched promptly by the others. The vital question is how much shading of the list prices there was; we know there was some.<sup>60</sup>

The most curious aspect of the evidence relates to the 1931 price increase. For a monopolist (or a cartel) to raise price in the face of declining costs and demand is evidence not of noncompetitive conduct but of irrationality. A profit-maximizing monopolist or cartel will reduce price when either costs or demand—or both—decline.<sup>61</sup> The only exceptions

58. 328 U.S. 781 (1946).

59. Turner, *supra* note 7, at 660-61.

60. See W. NICHOLLS, PRICE POLICIES IN THE CIGARETTE INDUSTRY—A STUDY OF "CONCERTED ACTION" AND ITS SOCIAL CONTROL 1911-50, at 78, 89 (1951).

61. In Figure 3, costs have fallen from  $MC$  to  $MC'$ ; the new profit-maximizing price,  $Pm'$ , is lower than the old. In Figure 4, demand has declined from  $dd$  to  $dd'$ ; again, the new profit-maximiz-

would be if the monopoly or cartel were first formed in a period of declining cost or demand, or if it had previously been unable to establish the joint maximizing price; but if there was tacit collusion among the leading cigarette manufacturers it was apparently fully operative well before the 1931 price increase.<sup>62</sup>

There is another version of what happened in 1931, which runs as follows.<sup>63</sup> Reynolds was the first cigarette manufacturer to wrap cigarette

ing price is lower than the old. In Figure 5, both costs and demand have declined, resulting in an even sharper drop in price by the profit-maximizing monopolist.

FIGURE 3

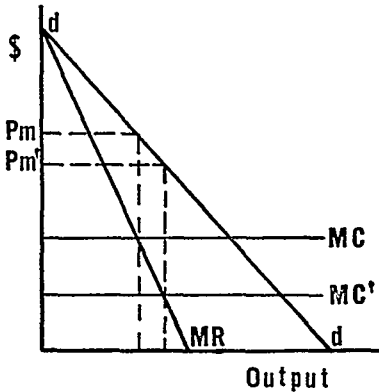


FIGURE 4

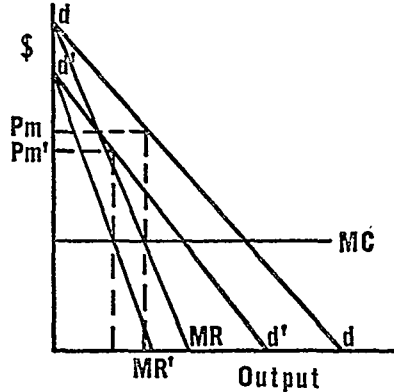
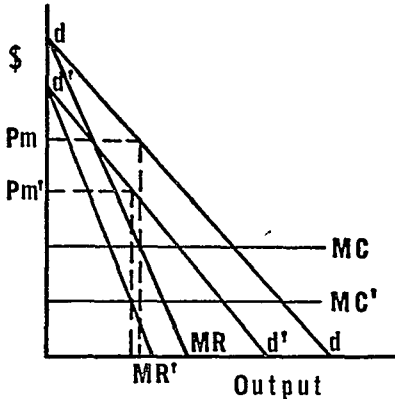


FIGURE 5



It might well be rational for a monopolist or cartel to raise price if demand were not declining but rather becoming more inelastic; and there are some who believe that demand curves do tend to become more inelastic in times of depression (and some who believe the opposite). See Ruggles, *The Nature of Price Flexibility and the Determinants of Relative Price Changes in the Economy*, in *BUSINESS CONCENTRATION AND PRICE POLICY* 441, 461-62 (Nat'l Bureau Econ. Research 1955). There is no evidence, however, that the cigarette manufacturers believed that the depression had made the demand for cigarettes less elastic.

62. See W. NICHOLLS, *supra* note 60, at 78, 88-89.

63. The following description is based on *id.* at 83-88. Nicholls himself, it should be noted, concludes that "the fact that all saw fit to follow Reynolds' increase in 1931 suggests a strong element of cartel-like behavior." *Id.* at 89. The facts that he recites, however, support the alternative explanation given in text.

packages in cellophane and its rivals were not immediately able to adopt the technique. Thinking that consumers would pay more for "humidor-wrapped" cigarettes, especially if the innovation was well advertised, Reynolds raised its price by about 6 percent and at the same time substantially increased its advertising. Its major competitors could have remained at the previous price, but they decided to match Reynolds' price increase and to counter its advertising campaign with stepped-up efforts of their own. They were convinced that the consumer was insensitive to small price differences. After all, cigarette revenues had held up well during the depression without any price cut, indicating no weakening in demand despite the general economic condition. The consumer might even infer that their product was inferior to Reynolds' if sold at a lower price. Tobacco costs were declining, but, as mentioned, increased advertising outlays were contemplated. This pattern of conduct—successful product differentiation leading to a higher price and higher advertising outlays—could occur under competitive conditions.

The companies' estimate of market conditions was poor. Within 18 months the market share of the economy brands had increased more than 70-fold, from 0.3 to 22.8 percent,<sup>64</sup> and the major sellers had rescinded the price increase, their position permanently impaired.<sup>65</sup> The rapid erosion of the majors' market share indicates how limited their power over price actually was; but what is more important to the present discussion is that their pricing behavior can be plausibly explained without hypothesizing tacit collusion. Not to labor the point unduly, price behavior is often equivocal evidence of collusion. That should not lead one to despair entirely of the workability of the suggested rule. If sellers engage in tacit collusion with any success they will generate some of the kinds of evidence discussed,<sup>66</sup> and I do not assume that courts are congenitally incapable of handling such evidence intelligently. If colluding sellers generate no such evidence, their collusive efforts will not have amounted to much. Economically significant collusion should leave some visible traces in the pricing behavior of the market, even granting fully the interpretive difficulties that such behavior presents.

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64. *Id.* at 92.

65. See Tennant, *The Cigarette Industry*, in *THE STRUCTURE OF AMERICAN INDUSTRY* 357, 367 (3d ed. W. Adams 1961).

66. For a persuasive argument that the behavior of the steel industry in the 1950's indicated tacit collusion see Adelman, *Steel, Administered Prices and Inflation*, 75 Q.J. ECON. 16 (1961). The type of evidence that Professor Adelman was able to obtain from public documents—evidence relating to the manner and timing of price increases and to the pricing behavior of the industry in the face of very substantial excess capacity—might not be sufficient to persuade a court that the firms had in fact tacitly colluded; but the circumstances he relates are exceedingly suspicious, and a diligent inquiry by the Department of Justice might well have developed sufficient economic evidence to justify a finding of guilt under the standard proposed in this Article. Only an actual attempt to apply the standard will reveal whether it is workable.

### C. *The Problem of Remedy*

It remains to consider whether an interpretation of section 1 forbidding tacit collusion would be effective in altering the conduct of sellers in the desired way; whether, in other words, the sanctions for violation of the rule would be adequate. I shall address, first, the general adequacy of the sanctions for illegal price-fixing, and then the special problems that might be involved in fashioning remedies against tacit collusion.

It will be convenient to distinguish two types of sanction: the remedial and the punitive. The line between the two categories is not hard and fast, but in general the remedial sanction seeks merely to redress or head off injury—simple damages and an injunction are examples—while the punitive sanction seeks to deter violations by an exaction that may be greater than either the profit to the wrongdoer or the injury to his victims. Price-fixing provides an excellent example of why punitive sanctions are sometimes necessary to ensure reasonable compliance with the law. In deciding whether to comply with a legal rule, a rational individual will discount the gravity of the possible sanction by the probability of escaping detection.<sup>67</sup> Price-fixing can be concealed. The probability of escaping detection is greater than zero, probably far greater. If the only sanction for illegal price-fixing were simple damages or injunction, firms would have an inadequate incentive to comply with the law. If caught, they would simply be forced to disgorge past profits from price-fixing or to forgo future opportunities to fix prices; and since they would often not be caught, it would in general be worth their while to fix prices, assuming, of course, that the costs of collusion in the particular circumstances were less than the anticipated returns.

I have overstated the case slightly. Damages, were they correctly computed in price-fixing cases, would normally exceed the monopoly profits of the colluders,<sup>68</sup> and a broadly worded injunction might inhibit a defendant's freedom of action beyond simply preventing it from engaging in illegal price-fixing. Even remedial sanctions against price-fixing, therefore, would inescapably contain punitive features in the sense I am using the term. Still, there is little doubt that punitive sanctions are a necessary element of an effective rule against price-fixing.

There is reason to question whether the punitive sanctions that can be imposed against price fixers under existing law are adequate. Violation of the Sherman Act is a misdemeanor; violators can be fined up to \$50,000 and (if individuals) imprisoned for up to one year.<sup>69</sup> Prison terms, however,

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67. Cf. Becker, *Crime and Punishment: An Economic Approach*, 78 J. POL. ECON. 169 (1968).

68. See note 103 *infra*.

69. Sherman Antitrust Act § 1, 15 U.S.C. § 1 (1964).

70. See J. CLABAULT & J. BURTON, *supra* note 29, at 11, 55.

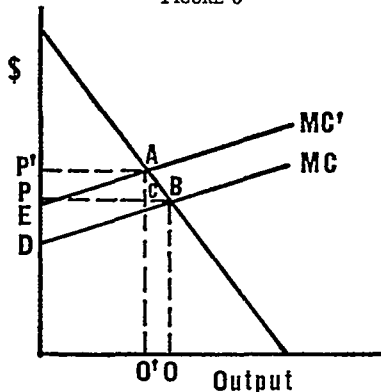
are rarely imposed and when imposed are usually nominal in length,<sup>70</sup> and the maximum fine is too small to have a significant deterrent effect on a large corporation. To be sure, a corporation must act through individuals, and the fine, together with the stigma of criminal conviction, may be quite enough to deter most corporate officers and employees from attempting to fix prices even when no prison sentence is likely to be imposed. Still, the absence of effective penalties on the corporation is troubling.

The threat of a private treble-damage suit<sup>71</sup> provides an additional, and probably quite important, element of deterrence; but its deterrent value is limited. The penalty component in the award, being limited to twice the actual damages, may not be adequate in all cases. Moreover, since damages are extremely difficult to prove in a price-fixing case—what is involved is a determination of what the competitive price would have been had the defendants not colluded—tying the penalty to the provable damages may frequently result in judgments that are too small. Perhaps the most serious deficiency of the treble-damage suit is that the usual victims of illegal price-fixing are in no position to invoke it. In general, a price-fixing conspiracy, if effective, will inflict harm (1) on a large number of nonbusiness (mostly individual) consumers and (2), if the members of the conspiracy sell to other business firms rather than directly to the ultimate consumer, possibly on the owners of certain factors of production used by those firms, who need not be the firms' shareholders.<sup>72</sup> The injury to an individual consumer

71. See Clayton Act § 4, 15 U.S.C. § 15 (1964).

72. This point is illustrated in Figure 6. Suppose that the purchasers of the product whose price is fixed are themselves business firms, and the effect of the conspiracy is to raise their costs from  $MC$  to  $MC'$ . The firms will raise their price from  $P$  to  $P'$  and reduce their output from  $O$  to  $O'$ . Customers of the firms will suffer. They will pay  $P'ACP$  more, and will also be forced to turn to substitute products that are inferior for their purposes, a loss in value to them measured by the area  $ABC$ . Owners of certain durable instruments of production (such as land) will also be hurt, although to a much lesser extent; their returns (or "quasi-rents") will be reduced from  $PBD$  to  $P'AE$ . The firms' shareholders will not be harmed, however, unless the firms are themselves the owners of the rent-receiving factors or were previously receiving monopoly profits. Furthermore, there will be no loss of quasi-rents if costs are constant rather than increasing or if the rent-receiving factors are nonspecialized and can earn equivalent rents in other employments. In general, then, it would appear that consumers are the principal victims of price-fixing conspiracies.

FIGURE 6



or factor owner, however, will ordinarily be too small to warrant incurring the expense of a lawsuit.

The courts in recent years have sought to get around this problem by permitting business customers to sue for thrice the difference between what they paid the conspirators and what they would have paid under competition, regardless of whether the higher price in fact caused *them* any injury, and by sanctioning class actions in which the class consists of consumers injured by the conspiracy.<sup>73</sup> Both devices are unsatisfactory. It is anomalous to permit suits for damages by firms that have not been injured; moreover, a firm may hesitate to jeopardize its good relations with suppliers merely to bring a suit for windfall profits. The class action, save for large institutional purchasers, is a delusion. There is no feasible method of locating and reimbursing the consumer who several years ago may have paid too much for a toothbrush (or substituted another product) as the result of a price-fixing conspiracy among toothbrush manufacturers. In these circumstances the class action becomes a device by which enterprising lawyers obtain large fees.

Both the remedial and punitive sanctions for illegal price-fixing would be strengthened by amending the Sherman Act to authorize suits by the United States for both the total damages attributable to an alleged conspiracy and an appropriate civil monetary penalty. (At present the Government can sue for damages only when it has been a victim of the unlawful conspiracy and can recover only its actual damages plus the cost of suit.)<sup>74</sup> Determination of the amount of the penalty should be left to the judge's discretion, to be exercised in light of the gravity of the offense, the size of the corporation, and its previous record of antitrust violations. (One might wish to retain double the actual damages as the minimum penalty, but there should be no maximum.) The entire judgment, both actual damages and penalty, would be paid into the Treasury. The procedure would displace the private suit in any case where the Government sued, since it would be inappropriate to permit the same damages to be recovered in successive suits.

Pending such a reform, one is compelled to acknowledge a deficiency in the penalty structure of the price-fixing prohibition. This deficiency would be especially serious in the context of tacit collusion. Being more difficult to detect than express collusion, it should be punished, if anything, more severely.<sup>75</sup> In a case of tacit collusion, moreover, a court might be

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73. See *Hanover Shoe, Inc. v. United Shoe Mach. Corp.*, 392 U.S. 481 (1968); *City of Philadelphia v. Morton Salt Co.*, 385 F.2d 122 (3d Cir. 1967), *cert. denied sub nom. New York v. Morton Salt Co.*, 390 U.S. 995 (1968). I know of no antitrust class action in which individual (as opposed to institutional) consumers have been permitted to recover, although such recovery would be permitted under a recent settlement proposal made by a group of drug manufacturers who are defendants in a private price-fixing suit. *Wall Street Journal*, Feb. 6, 1969, at 2, col. 2.

74. See Clayton Act § 4A, 15 U.S.C. § 15a (1964).

75. This assumes, but I think reasonably, that tacit price-fixing is no less morally opprobrious than express price-fixing.

reluctant to impose any criminal penalties, at least until the rule forbidding it had become well established and clearly defined. I am not prepared to admit, however, that the deficiency in the penalty structure, serious as it is, would be fatal to a rule forbidding tacit collusion under section 1. The threat of private treble-damage actions would provide some deterrence. In addition, when a violation was discovered and enjoined,<sup>76</sup> there would then be an effective deterrent against a repetition of the offense by the convicted firms. The penalty for violating the injunction would depend entirely upon the discretion of the judge; there is no fixed maximum.<sup>77</sup> Violation of an injunction against tacit collusion may be difficult to prove, but no more so than the original violation of law that gave rise to the injunction.

Moreover, there may be extreme cases where dissolution is the appropriate remedy for convicted tacit colluders because repetition of the offense is difficult to prevent by other means. Ordinarily the conventional remedies should be adequate, but courts should not shrink from employing dissolution in an exceptional case.<sup>78</sup> It is no objection that dissolution is addressed to market structure rather than behavior. As noted earlier, non-competitive pricing is very much a function of the structure of the market; even express collusion is rarely practicable in markets that are not oligopolistic in structure. The possibility of dissolution should provide an additional deterrent to tacit collusion.

Assuming that the oligopolist can be given a strong incentive to comply with a legal rule forbidding tacit collusion, will it be possible for him to comply? Or would compliance involve such irrational behavior, as Professor Turner argues, that it could not realistically be expected?<sup>79</sup> I observed earlier that it is quite rational for an oligopolist to decide not to collude. What is involved is a decision to expand output until the return to investors is roughly equal to what they could earn in other activities, a course routinely followed by sellers in competitive markets. There are, as we saw, quite good reasons why even in the absence of legal penalty an oligopolist might decide not to restrict output: inability to predict his rivals' reactions and fear that they would cheat. Punishing tacit colluders would

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76. I have in mind a relatively simple and general injunction against express or tacit price-fixing, the principal purpose of which would be to supply a predicate, as discussed in the text, for the imposition of very severe penalties in the event of a subsequent episode of price-fixing by the defendants. I do not suggest that the injunction attempt to regulate the details of the defendants' pricing.

77. See *United States v. United Mine Workers*, 330 U.S. 258, 302-06 (1947).

78. In some cases a conditional decree of dissolution might be the appropriate remedy. The defendants would know that a resumption of noncompetitive pricing would result in actual dissolution. Cf. *United States v. American Optical Co.*, 1966 Trade Cas. 82,670 (E.D. Wis. 1966). The courts clearly have power to order dissolution in any price-fixing case in which that is the appropriate remedy. Dissolution has, of course, been ordered in a number of monopolization cases, and the remedial provisions for sections 1 and 2 of the Sherman Act are identical. See *Sherman Antitrust Act* § 4, 15 U.S.C. § 4 (1964).

79. See Turner, *supra* note 7, at 669.

provide an additional and potent reason to abjure noncompetitive pricing.<sup>80</sup> This should be true even in the example that Turner offers as the clinching argument for his view: where demand is declining and competitive prices would entail losses to the industry.<sup>81</sup> Express collusion may often be the only expedient that will enable an industry to avoid losses in a period of declining demand, yet one assumes that the prohibition against such collusion retains a considerable deterrent effect even in those circumstances. Firms faced with losses will not collude if they anticipate that the cost of collusion, as a result of punishment, will exceed its benefit in averting business losses. Oligopolists would reason the same way were tacit collusion illegal under section 1.

Businessmen should have no difficulty, moreover, in determining when they are behaving noncompetitively. Tacit collusion is not an unconscious state. If the sales division of a company recommends that it offer a wider variety of products in order to exploit consumer demand more effectively, and the financial division recommends against that course on the ground that it will make it more difficult for the industry to maintain "healthy" prices, top management can be in no doubt of the significance of its action if it adopts the financial division's recommendation. More generally, given the tension between sales and financial executives that characterizes most corporations, the question whether to collude tacitly will be thrust upon management constantly. The sales people will argue for offering discounts to lure away rivals' customers, for varying prices promptly as conditions of demand and cost change, for reducing prices to utilize idle capacity or to exploit locational advantages, and for other competitive, sales-increasing tactics; and, whenever they do, management will have to balance their claims against the advantages of securing or maintaining an understanding with the company's rivals to limit price competition. This calculus will be affected by threat of punishment.

The oligopolist who does refrain from restricting output runs no appreciable risk of being penalized for collusion nonetheless. If he is a leading seller—and a rule against tacit collusion would be invoked only against the leading sellers in a market—his refusal to accede to an understanding on prices will make it impossible for the other firms to maintain noncompetitive prices, and there will be no systematic price discrimination, no persistent excess capacity attributable to restriction of output, no monopolistic pattern of reaction of price to cost changes—in short, none of the symptoms of collusion.

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80. I emphasize that I am not proposing that equivalence of price and marginal cost be the test of compliance with section 1. All I am arguing is that a deliberate restriction of output by competitors is conduct that rational men can avoid—and will avoid if it is made sufficiently costly to them to engage in it.

81. See Turner, *supra* note 7, at 670.



In closing, might I suggest that if there is a good case to be made against the proposed employment of section 1 of the Sherman Act, it will be built on the practical difficulties of proving tacit collusion. That, rather than the doctrinal or remedial questions, is the heart of the problem and should be the focus of the debate.

#### IV. STRUCTURAL SOLUTIONS TO THE OLIGOPOLY PROBLEM

I turn now to other remedies, alternative or supplemental, that have been suggested for dealing with the problem of noncompetitive pricing by oligopolists: new legislation dealing specifically with oligopolies; a reinterpretation of section 2 of the Sherman Act (the monopolization provision) to reach oligopolies; and strict enforcement of section 7 of the Clayton Act against horizontal mergers, to prevent the emergence of new or the aggravation of existing oligopolies. These remedies have in common the fact that they regulate the structure of markets rather than the pricing or other behavior of the sellers in them. Among structural remedies, one can distinguish between those that change existing market structures through dissolution of large firms and prophylactic remedies that attack the causes of concentration, as by forbidding mergers.

##### A. Restructuring Oligopoly Markets

###### 1. The legislative route.

In *Antitrust Policy*, Professors Kaysen and Turner proposed the enactment of a statute condemning "unreasonable market power" and authorizing the dissolution of firms found to possess it.<sup>82</sup> The premise of this approach is that the existing antitrust laws cannot deal effectively with noncompetitive pricing by oligopolists. If that premise is rejected, the proposal is unattractive. To prevail under the unreasonable-market-power standard, the Government would have to establish the existence of a variety of structural, behavioral, and performance characteristics. The scope of inquiry contemplated is broader than in a section 1 proceeding, and indeed so broad as to raise serious questions of practicability.

A variation of this approach, which Kaysen and Turner also discuss and endorse, would equate unreasonable market power with the possession by the leading firms of a particular aggregate share of the market.<sup>83</sup> This

82. See text accompanying note 16 *supra*.

83. They propose the following statutory provision: "Market power . . . shall be conclusively presumed where, for five years or more, one company has accounted for 50 percent or more of annual sales in the market, or four or fewer companies have accounted for 80 percent of sales." C. KAYSEN & D. TURNER, *supra* note 16, at 267. Unless the defendants could show that their market power was justified (as by economies of scale), it would be deemed unreasonable. See *id.* at 268. It is interesting to note that elsewhere in *Antitrust Policy* the authors express considerable skepticism as to the appropriateness of their market-share test of market power. See *id.* at 98-99. President Johnson's antitrust task force (see note 15 *supra*) proposed a similar statute. See *Report of the White House Task Force on Antitrust Policy*, Part II and App. A (July 5, 1968, mimeo.). The differences of detail between the Kaysen-Turner and task-force proposals do not affect the discussion in text.

approach is much like that employed in the administration of the anti-merger law against horizontal mergers, where market-share percentages are the basic touchstone of illegality. Its principal appeal lies in dispensing with the requirement of proof that pricing is in fact noncompetitive in the highly concentrated industries subject to the legislation. But that is a questionable advantage, unless one is quite confident, contrary to our conclusion in part II-B, that high concentration is by itself a sufficient condition for noncompetitive pricing. It is an advantage of my proposal that, by requiring the Government to prove noncompetitive pricing, it will force inquiry as to whether and in what circumstances oligopoly in fact leads to such pricing. One might reply that the best way to learn about the economic characteristics of an industry is by patient academic study, not litigation. In principle that may be correct, but in fact most industry studies by economists have been based on the records of antitrust cases.

The approach has other troublesome aspects. One is its coverage. Not only is it unclear whether tacit collusion is rife in the limited number of industries embraced by any proposal that defines the area of illegality solely in terms of market shares, but tacit collusion may be a serious problem in many of the remaining industries.<sup>84</sup> Furthermore, dissolution, which Kaysen and Turner propose as the normal remedy in unreasonable market-power cases,<sup>85</sup> is neither the only possible remedy for noncompetitive pricing by oligopolists, as we have seen, nor generally the best remedy. It is likely to involve appreciable social cost. At the least, the reconstitution of a major industry will involve substantial administrative expenses; and if the firms are dissolved into units smaller than the efficient scale of operation in the industry, much larger social costs may be incurred. One can attempt to avoid the second result by allowing in defense proof that economies of scale would be lost by the reduction of firm size. But having to litigate that issue will increase the expenses of the proceeding; and the difficulty of determining efficient scale is such that erroneous results can be anticipated in many cases,<sup>86</sup> so that economies of scale may be sacrificed inadvertently.

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84. Kaysen and Turner get around this problem by proposing the market-share test as a supplement, rather than as an alternative, to their basic standard of unreasonable market power. See C. KAYSEN & D. TURNER, *supra* note 16, at 267. The task-force proposal (see note 83 *supra*) lacks this feature.

85. C. KAYSEN & D. TURNER, *supra* note 16, at 269.

86. There are two methods of determining efficient scale. One is by means of engineering and cost studies that attempt to determine efficiency directly. The extraordinary, and indeed disabling, difficulties involved in that method are discussed in Smith, *Survey of the Empirical Evidence on Economies of Scale*, in BUSINESS CONCENTRATION AND PRICE POLICY 213 (Nat'l Bureau Econ. Research 1955); Friedman, *Comment*, in *id.* at 230. The other, and more promising, method is the survivor method. See Stigler, *The Economies of Scale*, 1 J. LAW & ECON. 54 (1958), reprinted in G. STIGLER, *supra* note 31, at 71. Under that method, a scale of operation is deemed efficient if the total output of firms having that scale is stable or growing in relation to the other firms in the industry, and inefficient if it is declining. The survivor method is not, however, free from substantial difficulties of application; these are discussed by Professor Stigler in his *Addendum: Drawing Inferences from Firm Size on the Economies of Scale*, in G. STIGLER, *supra* at 89. An important problem in the immediate context is that application of the survivor method may require charting the fortunes of various size classes of

The threat of dissolution may also have a serious disincentive effect. Firms might hold back from expanding sales to the point at which they would become subject to dissolution under the statute, even if they were more efficient than their competitors. Kaysen and Turner would, to be sure, allow defendants to show in defense that their market power was attributable to completely laudable circumstances, notably their "extraordinary efficiency,"<sup>87</sup> but such a concept is, in my opinion, too nebulous to serve as a criterion of legality. Nor would such a defense, even if feasible, entirely solve the problem of disincentive effects. As leading sellers approached the point at which their aggregate market share would be so large as to trigger dissolution proceedings, they might decide to raise price as a means of preventing further growth and forestalling dissolution. That would aggravate the very problem, monopoly pricing, to which the proposed legislation is principally addressed.

## 2. *Joint monopolization.*

Under current interpretations of section 2 of the Sherman Act,<sup>88</sup> a single firm that has had a monopoly of a relevant market for a substantial period of time will probably be adjudged guilty of monopolization unless the market is a natural monopoly (that is, can efficiently accommodate only a single firm) or unless its monopoly is the result of a patent still in force.<sup>89</sup> It has been urged that this principle should be extended to oligopoly.<sup>90</sup> Oligopoly (under this view) is simply shared or joint monopoly, and oligopolists should be dissolved so as to dissipate their monopoly power. The attraction of this approach to its proponents is that it leads to the same result as special oligopoly legislation without having to persuade Congress to amend the law. I could rest, therefore, with a reference back to my objections to the legislative route. But the judicial approach has problems of its own that merit discussion.

It seems fairly clear that the original purpose of section 2 was to reach practices by which firms achieved monopoly power or sought to maintain it against potential entrants.<sup>91</sup> Many such practices, to be sure, could readily have been attacked as conspiracies in restraint of trade (for example, the series of acquisitions that resulted in the formation of the Standard Oil

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firms over a substantial period of time during which efficient size in the industry may be changing as a result of changes in demand or technology.

87. C. KAYSEN & D. TURNER, *supra* note 16, at 268.

88. 15 U.S.C. § 2 (1964).

89. This is Professor Turner's conclusion in his most recent article, *supra* note 19, at 1219; I am inclined to agree.

90. *See id.* at 1231. *See also* references cited in note 18 *supra*. Professor Turner implies, however, that something more than merely an oligopoly market share would be required to trigger the application of section 2 in this context; evidence of noncompetitive pricing would apparently be required. *See* Turner, *supra* note 19, at 1225-26.

91. *See, e.g.*, *United States v. American Tobacco Co.*, 221 U.S. 106, 181-83 (1911); Bork, *supra* note 45, at 28-30.

Trust),<sup>92</sup> but not all: Monopolizing practices of a single firm could not be reached under the first section. Construed along the foregoing lines, section 2 might still have some application to oligopolists; for there may be cases where firms seek to obtain or retain an oligopoly position as a basis for exercising monopoly power through express or tacit collusion, and I would have no difficulty in viewing these as monopolization cases. But this would provide no general answer to the oligopoly problem.

Learned Hand's *Alcoa* opinion<sup>93</sup> seems to have broken decisively with the interpretation of section 2 suggested above by holding (or at least implying) that the condition of being a monopolist for a substantial period of time is a violation, regardless of whether improper tactics were used to obtain or maintain the monopoly, unless the defendant can show that the monopoly was the product purely of economies of scale or of superior technical excellence (for example, as embodied in patents). Even in its original context of single-firm monopoly, the *Alcoa* doctrine seems open to serious question. There are three plausible explanations as to why a nonregulated monopoly has continued for a long time. The monopolist may have charged a low price, which made entry unattractive. He may have charged monopoly prices, but still not attracted new entry, either because the economies of scale were such as to allow room for only one firm in the market or because the monopolist, due to superior efficiency, had lower costs than a new entrant would have had. Finally, the monopolist may have employed bad practices such as patent abuse or area price discrimination to keep out entrants (for reasons that would carry us too far afield to consider here, this last hypothesis is perhaps the least likely). In none of these cases would elaborate structural reformation of the industry—whose costs have already been discussed—be warranted. In the first, the usual objections to monopoly lack force. In the second, the *Alcoa* court itself would exonerate the defendant. One could argue that exceptional technical or managerial efficiency should not be a defense because dissolution of the firm would not necessarily entail the sacrifice of efficiencies unrelated to scale. But of course the parceling out of the firm's assets and personnel among the successor firms might well destroy whatever happy combination of resources had been responsible for the firm's exceptional efficiency. Judge Hand was also on sound ground in worrying about the disincentive effects of visiting dissolution upon a firm whose monopoly is the product of such efficiency. In the third case, an injunction against the bad practices should normally provide adequate relief. Perhaps there are instances where a monopolist, although not unusually efficient or aggressive, or favored by overwhelming

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92. See McGee, *Predatory Price Cutting: The Standard Oil (N.J.) Case*, 1 J. LAW & ECON. 137 (1958).

93. *United States v. Aluminum Co. of America*, 148 F.2d 416 (2d Cir. 1945).

economies of scale, can nonetheless persist over a substantial period of time in charging monopoly prices without attracting new entry; but this is a matter for inquiry, not assumption.

If the *Alcoa* doctrine seems inappropriate as a solution to the problems raised by single-firm monopoly, it seems doubly inappropriate as applied to oligopoly. The basis for inferring undesirable performance is much stronger in the monopoly than in the oligopoly context. There are also exquisite difficulties in defining the scope of the rule in the latter context. It may not be entirely easy to decide what market share justifies classifying a single firm as a monopolist, but it would be far more difficult to decide when a firm was an oligopolist for the purpose of triggering an extended *Alcoa* doctrine. In this respect, a legislative cut-off point has much to recommend it.

My reservations concerning structural reformation, whether by new or under existing legislation, as a solution to the oligopoly problem can be restated as follows: With a few exceptions, such as where monopoly is conferred or protected by governmental franchise, a monopolist (or group of jointly acting oligopolists) can maintain its position in the market for a long time only (1) by forgoing monopoly gains, (2) by superior skill, (3) by predatory practices directed against prospective entrants, or (4) because the market is a natural monopoly. For the reasons noted earlier, none of these conditions warrants a restructuring of the firms in the market. Monopolies that lack the support of these conditions will usually be short-lived,<sup>94</sup> and radical structural remedies, which are themselves costly and protracted, seem inappropriate to cure transitory market imperfections. It follows that antitrust policy should emphasize the prevention of practices by which market power is obtained or exploited,<sup>95</sup> but steer generally clear of radical structural remedies.

I should make explicit two assumptions in the foregoing discussion. The first is that the behavioral and prophylactic antitrust remedies such as penalties and injunction are swift and relatively costless compared to dissolution proceedings. I suspect that careful empirical study would bear this out, although no such study has, to my knowledge, ever been made. But a proceeding against tacit collusion would doubtless be more costly and protracted than most price-fixing—or even merger—cases. The second assumption is that market processes will usually eliminate a monopoly

94. There is, of course, the possibility of recurrence, which may be especially great where the source of the monopoly power is collusion. A collusive arrangement may be short-lived, but be revived again and again.

95. One form of monopoly exploitation that I do not think the antitrust laws should attempt to prevent is monopoly pricing by the single-firm monopolist. Where monopoly pricing is the result of collusive activity, tacit or express, it is possible to eliminate it by eliminating the collusive activity. But monopoly pricing by a single-firm monopolist can be eliminated only by fixing the prices it charges. I have discussed elsewhere the acute problems involved in the direct regulation of monopoly prices and profits. See Posner, *Natural Monopoly and Its Regulation*, 21 *STAN. L. REV.* 548 (1969).

position not supported by one of the four mentioned conditions as quickly as would a dissolution proceeding: more precisely, that the difference between the costs imposed on society by a monopoly that is permitted to fall of its own weight and the costs imposed by one that is eventually dissolved by governmental action will usually not exceed the various direct and indirect costs attributable to the dissolution proceeding. Unable to prove that this is a correct assumption, I fall back on the proposition that the Government ought not intervene in private affairs unless its intervention can be expected to have a positive net social product. It follows that if my proposal to employ section 1 of the Sherman Act against tacit collusion is rejected as unfeasible, the alternative of applying radical structural remedies in highly concentrated markets should, on the basis of present knowledge, also be rejected.<sup>96</sup>

## B. *The Merger Guidelines*

Section 7 of the Clayton Act, as amended in 1950, forbids mergers or acquisitions whose effect may be substantially to lessen competition or tend to create a monopoly in any line of commerce in any section of the country.<sup>97</sup> The statute has been applied with extraordinary rigor to mergers between direct competitors.<sup>98</sup> The primary justification for so strict a policy is that it is necessary to prevent oligopoly pricing. This subpart will attempt an evaluation of that policy, drawing on the general analysis of oligopoly presented earlier in this Article. Our text will be the Department of Justice Merger Guidelines,<sup>99</sup> a recent, authoritative, and reasoned exposition of the strict approach, and one premised explicitly on the concept of oligopoly questioned here—the concept that a probability of noncompetitive pricing can be inferred from the number and size distribution alone of the firms in the relevant market.<sup>100</sup>

### 1. *The definition of market.*

I begin with a necessary digression on the principles for defining the relevant market in which to appraise a merger. A merger between a firm that sells 25 percent of the canned apricots sold in Tacoma and one that

96. It has been argued that forced deconcentration of highly concentrated industries is warranted by the extensive econometric evidence correlating concentration with profitability and the lack of comparable evidence correlating concentration with economies of scale. *Report of the White House Task Force on Antitrust Policy*, separate statement of Paul W. MacAvoy, 1-B to 2-B (July 5, 1968, mimeo.). Apart from questions as to the adequacy of the econometric evidence (see notes 36-37 *supra* and accompanying text), the analysis has two major weaknesses: (1) Given the acute difficulties involved in measuring economies of scale (see note 86 *supra*), no inference concerning their importance in concentrated industries can fairly be drawn from the absence of a substantial body of econometric studies; (2) as mentioned earlier, forced deconcentration would involve other costs besides the possible sacrifice of economies of scale.

97. Clayton Act § 7, as amended, 15 U.S.C. § 18 (1964).

98. See, e.g., *United States v. Pabst Brewing Co.*, 384 U.S. 546 (1966); *United States v. Von's Grocery Co.*, 384 U.S. 270 (1966).

99. 1 TRADE REG. REP. ¶ 4430 (1968).

100. See *id.* at 6681-82.

sells 20 percent cannot injure competition unless the sellers of canned apricots in Tacoma could, by colluding, raise price above its previous level without immediately losing the trade to other sellers. That will be impossible either if canned apricots have a close substitute (or many less-close substitutes) or if other sellers of canned apricots would, despite transportation costs or other barriers, find it profitable to sell in Tacoma should the market price there rise by even a small amount. Only if neither of these conditions is present can the merger affect price.

The Guidelines' handling of the concept of market leaves much to be desired. A seller will not be deemed a part of the market if the included sellers enjoy "some advantage"<sup>101</sup> over him (an advantage that "need not be great . . . so long as it is significant").<sup>102</sup> However, if the cost spread between the included and excluded sellers (holding quality constant) was only a few percent—not great, but significant, since it would be enough to prevent the excluded sellers from diverting any business from the included sellers so long as the latter did not raise their price—one would not be greatly concerned even if all the included sellers merged. Such a merger could not result in a price rise greater than the cost spread between excluded and included sellers, and the actual cost to society of the higher price would probably be much less.<sup>103</sup> In the more common case of a merger that did not create a monopoly, the impact on price would be still smaller.

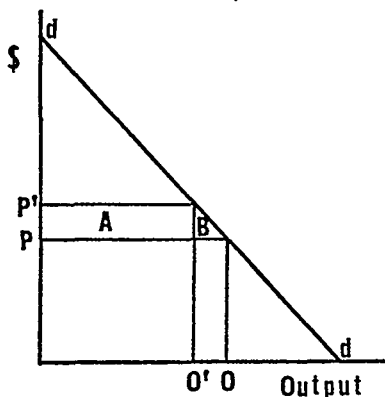
The specific provisions of the Guidelines relating to the geographical dimension of the market are especially troublesome. Any geographical area may be deemed a relevant market unless it clearly appears that there

101. *Id.* at 6682.

102. *Id.*

103. Figure 7 illustrates this point. When the market price rises from  $P$  to  $P'$ , those purchasers who continue to buy the product pay a total of  $A$  more than they paid at the lower price. While a private cost to the purchasers, this amount is not a cost to society but merely a transfer to the sellers: The reduction in consumers' surplus is exactly matched by the increase in producers' surplus. The social cost of the higher price is the smaller area  $B$ , the additional consumers' surplus that was generated at the greater output.

FIGURE 7



are no transportation costs or other barriers to outsiders.<sup>104</sup> This is too sweeping. The existence of economic barriers confronting sellers not active in a particular local area does not make that area a market. To illustrate, if tin cans sell for 25 cents in Kansas City and 20 cents in Pittsburgh, and the cost of transporting cans from Pittsburgh to Kansas City is 5 cents, the Pittsburgh sellers may very well sell no cans in Kansas City. But a slight price rise in the Kansas City market would draw the Pittsburgh sellers in. They are a part of the Kansas City market so far as predicting the possible price consequences of a merger is concerned.<sup>105</sup>

The Guidelines should be revised to dispel the unfortunate impression (perhaps unintended) that it is proper to exclude from the relevant market sellers who are barred by transportation or other costs from selling there *at the existing price* but who would not be barred if that price were to rise, even slightly, as a result of price-fixing. It would also be an improvement if the Guidelines were more specific on market definition. I would suggest two new rules for this purpose. The first is that *all* sales of plants that have (or at some time during the recent past had) *some* (nontrivial) sales in the relevant market be included in the market. Such a plant should be able quite easily to shift additional output to the area should a differential price rise make such a shift attractive. Since this assumption will not always be correct, the rule should allow for an exception. For example, where sales from distant plants had been made only in periods of shortage when prices in the local area were very high, the rule would not apply.

The second rule is that other sellers—that is, those who do not sell and have not recently sold any part of their output in the area in question—should be excluded from the relevant market if (1) the price (or prices) they charge in their own market (or markets), plus the common-carrier charges for shipping the product from their markets to the one in question, appreciably exceed (say, by 5 or more percent, depending on the absolute size of the market in question) the market price in the latter market; or (2) they are forbidden by law to sell in that market. This is an easily applied test for excluding from the relevant market firms that would be barred by transportation costs or legal restrictions even if the market price rose appreciably. Again, an exception is necessary. Sometimes it may be

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104. Department of Justice Merger Guidelines, 1 TRADE REG. REP. ¶ 4430, at 6683 (1968).

105. The qualifying clause in this sentence—"so far as predicting the effects of a merger is concerned"—deserves emphasis. In a monopolization, rather than a merger, case it might be quite appropriate to exclude the Pittsburgh sellers. Suppose only one company sold tin cans in Kansas City, and the question was whether it had a monopoly of a relevant market. It would not be enough to find that substitution would occur if the Kansas City seller raised his price further; the 25-cent price might be the monopoly price. The relevant inquiry would be whether Pittsburgh sellers could sell in Kansas City if the price there rose slightly above competitive levels; if not, Kansas City is a relevant market so far as determining the existence of market power is concerned. When the question is what further effect on price a merger might have, however, it is unnecessary to inquire whether existing prices are competitive.



possible for outside sellers quite inexpensively to overcome apparently formidable transport problems by establishing a local production or distribution point.

A considerable gray area will remain: (1) cases where an exception to one of the rules is argued; (2) cases in which transportation charges are not readily determinable by inspection of filed common-carrier tariffs or where additional costs (transportation costs in the broadest sense but not freight costs) peculiar to the local market in question may prevent outsiders from selling there unless the market price rises by a considerable amount. These exceptional situations will have to be treated on a case-by-case basis; guidelines cannot be particularly helpful.

2. *The criteria of illegality for horizontal mergers.*

The Guidelines provide that if a market is "highly concentrated" (defined as where the four largest firms account for at least 75 percent of the sales in the market), a merger between two firms each with a 4 percent market share will be challenged; but if the acquiring firm has a 15 percent share the acquired firm need have only 1 percent for the merger to be challenged.<sup>106</sup> If the market is "less highly concentrated," the operative percentages are higher, although not by much: 5 percent for the acquiring firm if the firms are the same size, 25 percent if the acquired firm has only a 1 percent market share.<sup>107</sup> If there is a "significant trend toward increased concentration" (defined as where the market share of any grouping of firms between the two and the eight largest has increased by 7 percent in the previous 5-10 years), any acquisition by a firm in that grouping of any other firm having a market share of 2 percent or more will be challenged unless the market is "wholly unconcentrated,"<sup>108</sup> a term that, like "less highly concentrated," is not defined.

I am sympathetic in two respects to the Guidelines' emphasis on market-share percentages as the primary touchstone of legality. First, it seems appropriate to challenge mergers that markedly increase concentration in already highly concentrated markets or that create high concentration in an industry that previously had an atomistic structure. Since oligopoly appears to be a necessary although not sufficient condition of collusive behavior that will often escape detection (tacit collusion, in my term), a proper office of the merger law is to prevent the emergence of highly concentrated markets. Second, tacit collusion is rarely a problem when a market is not highly concentrated. It follows that we need have little concern with mergers that do not create (or aggravate) a high level of concentra-

106. Department of Justice Merger Guidelines, 1 TRADE REG. REP. ¶ 4430, at 6683 (1968).

107. *Id.* at 6684.

108. *Id.*

tion.<sup>109</sup> Nevertheless the present Guidelines forbid a variety of mergers, some quite small, in markets that are not highly concentrated.

A better approach would be to begin by identifying some threshold below which the danger of effective tacit collusion is slight. One could then ignore any merger in a market that had not reached the threshold unless the merger pushed the market across it. An initial question is how to measure concentration. It is customary to describe the level of concentration in a market in terms of the aggregate market share of the four or eight largest firms. This takes no account, however, of the distribution of market shares within the top group or of the number and size of the firms outside that group, although the likelihood of noncompetitive pricing is diminished if there is a fringe of small firms and enhanced if one or two firms are clearly dominant. Compare a market of eight firms in which the leading firm has a 65 percent market share and the other seven each have 5 percent with a market of 100 sellers in which the four largest firms have 20 percent each, with the rest divided about equally among the remaining firms. The first market is more likely than the second to behave noncompetitively, but the four-firm concentration ratios are the same (80 percent).

A more discriminating index of concentration is provided by the Herfindahl measure, which expresses the level of concentration in terms of the sum of the squares of each firm's market share.<sup>110</sup> In our example, the first market would have a Herfindahl measure of 0.44, and the second a much lower Herfindahl measure: a shade over 0.16. One can complain that the Herfindahl measure is also arbitrary. But too little is known about the precise relationship of concentration to collusion to devise a measure of concentration that will accurately gauge the probable effect of different concentration patterns on pricing, and the Herfindahl measure, in addition to the virtues already mentioned, correlates well with a factor that is crucial to behavior in oligopolies: the ease of detecting cheating.<sup>111</sup>

The advantages of the Herfindahl measure can be further illustrated by considering specific thresholds. If one were to use four- or eight-firm concentration ratios as the basis for determining the threshold below which mergers would not be challenged, a plausible rule would be not to challenge a merger if the eight largest firms in the market had less than 50

109. One could argue that small horizontal mergers should be forbidden lest a series of such mergers, each innocuous in itself, result in transforming an unconcentrated into a highly concentrated market. But that danger should be adequately taken care of by the threshold device discussed in the following paragraph of text.

110. See G. STIGLER, *supra* note 31, at 31-36; Adelman, *Comment on the "H" Concentration Measure as a Numbers-Equivalent*, 51 REV. ECON. & STAT. 99 (1969). In contrast, the rather similar "entropy" measure of concentration, see Finkelstein & Friedberg, *The Application of an Entropy Theory of Concentration to the Clayton Act*, 76 YALE L.J. 677 (1967), lacks a theoretical rationale. G. STIGLER, *supra* at 33; Stigler, *Comment*, 76 YALE L.J. 718 (1967).

111. See G. STIGLER, *supra* note 31, at 55.

percent of the sales, unless the merger put the market across the threshold. But that would mean that in a market composed of two very large firms, each with a market share of 20 percent, and a scattering of much smaller firms, a merger of the two leaders would be insulated from challenge. In contrast, if the threshold were 0.1 Herfindahl, small mergers in such a market would escape scrutiny but not a merger of the two leading firms, since it would raise the Herfindahl index to above 0.16.

I am less concerned with proposing exact figures than with asserting two principles: first, that the Herfindahl measure seems more appropriate than four- or eight-firm concentration ratios as a measure of concentration, and second, that one function of merger guidelines should be to delineate as clearly as possible the class of horizontal mergers that will *not* be challenged. The second principle can be extended to define a class of mergers that will automatically be challenged. For example, the Guidelines might provide that in any market in which the Herfindahl measure exceeded 0.2 any merger that increased the measure by at least 0.04 Herfindahl would be challenged. An example of the operation of this rule is given in the margin.<sup>112</sup>

This approach again leaves a middle area where uncertainty is unavoidable, unless one prefers to be extremely arbitrary. In this middle area it is appropriate to go beyond market-share percentages and consider several other dimensions of market structure that bear on the likelihood of successful price-fixing. One is the absolute number of sellers. Collusion is more difficult in a market that has a large number of sellers than in one with relatively few, even if the additional sellers are too small to have much effect on concentration ratios or the Herfindahl measure. This is because it will normally be impractical to include the many small sellers in the cartel, and they will be tempted to expand their market positions at the expense of the major sellers if the latter, through collusion, raise their prices above the competitive level. Another pertinent factor is the level of concentration on the buying side of the market. The more concentrated the buying side is, the less likely is successful collusion by the sellers. A third factor is the homogeneity of the product. Cheating is hard to detect in the case of a nonstandardized product. A fourth is the history of collusion in the market. If a market has a history of section 1 violations, concern with further increases in concentration becomes more than theoretical.<sup>113</sup>

112. Suppose a market consisting of five firms with the following market shares:  $s_1 = 40\%$ ,  $s_2 = 30\%$ ,  $s_3 = 20\%$ ,  $s_4 = 8\%$ , and  $s_5 = 2\%$ . Then  $H = s_1^2 + s_2^2 + s_3^2 + s_4^2 + s_5^2$ , or 0.2968. Now suppose that the second and fourth firms merge. Now  $H = s_1^2 + (s_2 + s_4)^2 + s_3^2 + s_5^2$ , and  $(s_2 + s_4)^2 = s_2^2 + 2s_2s_4 + s_4^2$ . Thus, the increase in the Herfindahl measure as the result of a merger is twice the product of the market shares of the merging firms, or in our example 0.0480. The new Herfindahl measure is 0.2968 + 0.0480, or 0.3448.

113. These factors are discussed in G. STIGLER, *supra* note 31, at 39-62, 300.

One could enumerate other considerations that are relevant to the feasibility of collusion, but a desire to keep enforcement of section 7 as simple as possible prompts me to exclude factors that may be difficult to measure (such as the condition of entry or the economies of scale) or whose significance is unclear (such as a previous trend toward concentration, or a shift in rank among the leading firms). The included factors are both clearly material to the likelihood of successful collusion and relatively easy to measure. The number of sellers in the relevant market can easily be counted; it should be possible to estimate the concentration on the buying side; it should not be too difficult to classify products along a spectrum between the highly customized and the completely standardized (even as to credit, delivery, and other terms of sale); and the record of previous section 1 violations in an industry can be compiled very easily. The weight to be given these factors in comparison to various levels of concentration between the lower and upper thresholds will require an exercise of judgment in each case, but the gain in discriminating enforcement should outweigh the slight loss in certainty.<sup>114</sup>

A word, in closing, on the defense of efficiencies in a section 7 proceeding. The Guidelines reject any such defense,<sup>115</sup> and I am broadly sympathetic to this approach.<sup>116</sup> A merger may, to be sure, enable the merging firms to achieve economies of scale, or facilitate the replacement of inferior by superior management, although, since there are a number of other possible motivations for mergers, no general presumption that mergers promote efficiency can be indulged. The difficulty, one discussed earlier in a

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114. Other provisions of the Guidelines are relevant to the control of oligopoly, in particular those relating to potential competition. See Department of Justice Merger Guidelines, 1 TRADE REG. REP. ¶ 4430, at 6687-88 (1968). One who accepts that a highly concentrated market structure fosters collusion will desire to preserve potential competition both as a limitation on anticompetitive behavior by the firms in such markets and as a source of new competitors who by entering such markets would reduce concentration in them. The Guidelines accordingly provide that a merger between a leading firm in a concentrated market and "one of the most likely entrants" into the market is forbidden, with the class of "most likely entrants" to be delineated in each case by reference to the natural expansion patterns of firms, their financial resources, and so forth. *Id.* I have no objection in principle to this approach, but am troubled by two features of it. First, the Department has failed to confine its attention to those markets sufficiently concentrated to create a plausible danger of tacit collusion. I have discussed that point in the horizontal context and will not pursue it here. Second, if the class of most likely entrants contains more than a few firms, the elimination of one is unlikely to affect materially the effectiveness of potential competition or the likelihood of actual entry. This qualification is absent from the Guidelines.

115. Department of Justice Merger Guidelines, 1 TRADE REG. REP. ¶ 4430, at 6684-85 (1968).

116. As I have argued elsewhere, however, there should be an exception (perhaps it is implicit in the Guidelines' reference to "exceptional circumstances" in which a defense of efficiencies may be accepted) for the situation in which a market is a natural monopoly, that is, incapable of efficiently supporting more than one firm. See Posner, *supra* note 95, at 586-87 (1969). If the merger route blocked, the firms in such a market compete vigorously, all but one—by definition—will fail. Competition is so dangerous a strategy in these circumstances for most of the participants that they will be strongly motivated to collude rather than compete; and since there are unlikely to be more than a very few firms in a market that is a natural monopoly, conditions may be highly favorable for collusion in a form difficult to detect. These unusual circumstances warrant, in my judgment, an exception to the general policy of refusing to entertain defenses based on the alleged efficiencies that a merger will confer.

slightly different context,<sup>117</sup> is in measuring efficiency. That difficulty is aggravated in the present context by the fact that, since firms can grow and change other than by merger, the effect of blocking a merger that would increase efficiency is ordinarily at most to postpone rather than to preclude altogether the achievement of the efficiencies in question. To determine the cost of blocking the merger would require, therefore, a determination not only of the magnitude of the efficiencies that it would produce but also the probable interval of time before they would be realized in any event. Until there is better evidence that these are tractable inquiries, there is much to be said for excluding them from section 7 proceedings.<sup>118</sup> That is not an optimum solution, for its consequence is that section 7 enforcement may involve social costs of unknown dimensions. Perhaps the best that can be done, in the present state of our understanding, is to disallow the defense<sup>119</sup> but at the same time reduce the prohibitory scope of the statute to realistic limits and thereby minimize the occasions on which enforcement may impede the achievement of efficiencies. That is the course advocated here.

### CONCLUSION

The supposed inadequacy of section 1 of the Sherman Act to deal effectively with noncompetitive pricing by oligopolists has been a persistent theme in discussions of antitrust policy and a fertile source of proposals for new legislation and new applications of other antitrust provisions. This view of section 1 is rooted in the theory that noncompetitive pricing is virtually inevitable in a market having an oligopolistic market structure and hence not amenable to rules and remedies concerned with altering behavior without changing structure, and perhaps also in a lawyers' habit in applying section 1 of looking for evidence of actual agreement rather than for evidence of effects on competition. I have argued that noncompetitive pricing by oligopolists is not compelled, although it is facilitated, by the structure of the market. It is a variant of conventional cartel behavior, and there is a good chance that it can be controlled effectively by proceedings under section 1. Revision of section 1 to improve the penalties for violation, and improvements in economic knowledge to facilitate the drawing of inferences of collusion from observed firm behavior, would greatly assist but do not seem absolutely essential to this employment of section 1.

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117. See note 86 *supra*. The discussion in that note concerns the difficulty of determining efficient scale. I have discussed elsewhere some of the difficulties involved in determining managerial efficiency. See Posner, *supra* note 95, at 628-30.

118. And, a fortiori, for not attempting to balance the efficiency gains of a merger against its welfare losses (see note 103 *supra*)—another factor normally impossible to quantify—as proposed in Williamson, *Economies as an Antitrust Defense: The Welfare Tradeoffs*, 58 *AM. ECON. REV.* 18 (1968).

119. With the exception noted in note 116 *supra*.

Analysis of the basic question—the applicability of the traditional remedies against cartelization to noncompetitive pricing by oligopolists—led to a critical examination of other proposals for dealing with the problem. In general, these proposals, which involve the dismemberment of existing oligopolies and extremely stringent prohibitions against horizontal mergers, were found to be unduly severe. I ventured the suggestion that restructuring markets by breaking up existing firms can rarely be justified as sound antitrust policy. In the matter of prophylactic remedies, the approach in the Department of Justice Merger Guidelines of making market-share percentages the primary test of when to challenge a horizontal merger seems basically sound. However, the definition of market requires revision; the Guidelines should delineate a class of mergers that the Department will *not* challenge; a different measure of concentration should be employed; and the test of whether to challenge a merger should be broadened, in a middle range of cases, to include a few readily determinable factors in addition to market shares that analysis of oligopoly indicates to be relevant to predicting noncompetitive pricing. These factors are the absolute number of sellers in the market, the concentration on the buying side, the degree of standardization of the product, and the history of collusive activities in the market.