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Williamson on Predatory Pricing

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In an article published in 1975, we examined the economic and administrative aspects of various approaches to the problem of "predatory pricing" under section 2 of the Sherman Act,¹ and proposed that legal tests for predation be based on a limited number of cost-based rules.² Subsequently, Professors Posner and Scherer raised various objections to our proposed rules.³ An amplified version of our analysis, containing a summary of our responses and some relatively minor modifications of our initial proposals, appears in our antitrust treatise.⁴

Professor Williamson, in a recent issue of this *Journal*,⁵ also takes issue with us by defining predatory pricing through a complex set of rules that, he claims, would both enhance social welfare and be easier to administer. The main novelty, and the one for which he most strongly claims welfare and administrative superiority, is his proposal that "dominant firms" be prohibited, for a specified time period, from expanding output in response to new entry.

Williamson's supporting analysis is interesting and provocative, but ultimately unconvincing. We can state briefly the main points. First, Williamson and our other critics do not disagree with us about the danger that predatory pricing claims will be used to stifle legitimate

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1. 15 U.S.C. § 2 (Supp. V 1975).

2. Areeda & Turner, *Predatory Pricing and Related Practices under Section 2 of the Sherman Act*, 88 HARV. L. REV. 697 (1975).

3. See R. POSNER, *ANTITRUST LAW: AN ECONOMIC PERSPECTIVE* 191-92 (1976); Scherer, *Predatory Pricing and the Sherman Act: A Comment*, 89 HARV. L. REV. 869 (1976).

4. 3 P. AREEDA & D. TURNER, *ANTITRUST LAW* ¶¶ 711-722 (1978) [hereinafter cited without cross-reference as *ANTITRUST LAW*]. See particularly *id.* ¶ 715.

5. Williamson, *Predatory Pricing: A Strategic and Welfare Analysis*, 87 YALE L.J. 284 (1977).

price competition and to require a price umbrella over inefficient producers. Second, although Williamson's article focuses mainly on his proposed output-limiting rule, he seems to recognize that most real-world claims of predatory pricing can sensibly be analyzed only by comparing the price to the costs of the alleged predator. Third, although Williamson does, to be sure, insist on a "full cost" price floor in several instances, he does not satisfactorily distinguish such instances from those in which he joins us in recommending a marginal- (or variable-) cost price floor. Nor are his cost tests any easier than ours to apply. Fourth, within the limited arena where the Williamson output rule would apply, it rests on a questionable theoretical and empirical foundation, and as formulated seems hardly administrable at all.

We elaborate these points by (I) summarizing the contending positions, (II) assessing the output-limitation rule, and (III) analyzing the differences between Williamson's cost-based rules and our own.

I. The Respective Positions

We have defined predation in terms of short-run marginal cost (*SRMC*): prices below *SRMC* are predatory⁶ and prices above it are not. Because *SRMC* is often hard to identify, we proposed reasonably anticipated average variable costs (*AVC*) as a useful surrogate, but with two important practical qualifications. First, we suggested that reasonable disputes in defining which costs are "variable" be resolved by somewhat arbitrary rules; and, for reasons stated in our treatise, we concluded that most disputed items should be assigned to the variable cost category when dealing with alleged predatory pricing by a monopolist.⁷ Second, since *AVC* ceases to be a reasonably useful surrogate for *SRMC* for firms operating beyond optimal capacity, we suggested that a defendant monopolist be allowed to rely on *AVC* only when he offers some evidence indicating that *AVC* is not significantly below *SRMC*.⁸ We emphasize that ours is an *SRMC* standard. Even a price exceeding full or average cost (*AC*), which includes imputed capital costs, can be unlawful, although we would presume it lawful in the absence of a showing that *SRMC* is significantly higher. We emphasize that *AC* and *AVC* are used and adjusted and made the subject of

6. Room is left for "promotional" pricing by nonmonopolists. 3 ANTITRUST LAW ¶ 716.

7. *Id.* ¶ 715c.

8. *Id.* at 176. Although Williamson would not have seen our treatise when he wrote his article, these qualifications do address some of his objections to an *AVC* test. See Williamson, *supra* note 5, at 310-12, 333 n.122, 337 & n.129.

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presumptions only in order to obtain an approximation of *SRMC*.⁹ Because the *SRMC* standard is the essence of our approach, it is so identified for the remainder of our discussion.

There are four major reasons supporting our position. First, predatory pricing rules must take into account the proclivity of competitors to challenge a rival's price cuts, particularly when the rival is a larger firm. The threat of litigation may therefore materially deter legitimate competitive pricing. Second, pricing at *SRMC* is the result in competitive markets, and has the social welfare virtue of avoiding wasteful idling of current productive resources. Third, rules requiring price floors higher than *SRMC* will tend to preserve inefficient rivals or attract inefficient entry. Fourth, elimination or exclusion of rivals may in some instances cause long-run welfare losses that exceed the short-run gains from fuller use of capacity, but such long-run consequences cannot feasibly be incorporated into legal rules because they are intrinsically speculative and indeterminate.

Professor Williamson appears to agree with the preceding propositions,¹⁰ but, relying on other considerations, he proposes differing cost-based rules for illegality. With the exceptions of (1) market-clearing prices for "generational equipment" (already produced and held in stock),¹¹ (2) "occasional price wars of very limited duration" among established firms,¹² (3) promotional prices of "very short duration in conjunction with the sale of nondurable consumer goods,"¹³ and (4) prices above *AVC* under conditions of chronic excess supply in "declining industries,"¹⁴ Williamson requires all firms to charge at least a "cost-recovering" price. Distinctions are drawn between the intermediate and the long run. Williamson's justification for his particular cost-based rules is rather sketchy. The bulk of his attention and analysis is devoted to an output-limitation rule that condemns as

9. One must, of course, welcome further thought about practical ways to improve that approximation.

10. See, e.g., Williamson, *supra* note 5, at 289 ("It is crucial to make the distinction between protecting competitors and protecting competition. Sentiment is a cruel hoax if it leads to protecting competitors, since the consumer is invariably the loser when such rules are introduced."); *id.* at 290 ("Marginal cost pricing on a continuing basis has the optimality properties to which Areeda and Turner refer."); *id.* at 289 n.20 (marginal cost can be poor indicator of efficiency, but only "sometimes" and "infrequently"); *id.* at 288 n.16 (agrees that long-run possibilities "are intrinsically speculative and indeterminate" (quoting Areeda & Turner, *Schever on Predatory Pricing: A Reply*, 89 HARV. L. REV. 891, 897 (1976)). Williamson does contend, however, that short-run marginal-cost pricing is suspect when employed against new entrants. *Id.* at 290, 292-93.

11. *Id.* at 315-21.

12. *Id.* at 336.

13. *Id.* (Rule 3).

14. *Id.* at 322-23.

predators "dominant" firms (or members of a "collusive oligopoly") that "expand their (demand adjusted) output" within twelve to eighteen months of "new entry."¹⁵

Making certain assumptions regarding the "strategic" behavior of dominant firms facing the threat of new entry,¹⁶ Williamson contends that his output rule would induce dominant firms to charge less and sell more before entry than any cost-based rules would, and for that reason would also lead to lower aggregate production costs after entry. He also believes that his output rule would be easier to administer. To those claims we now turn, leaving to a later section our comments on Williamson's cost-based rules.

II. Output Limitation

The administrative difficulties in using Williamson's output-limitation rule are very severe, as we shall show. First, however, we shall examine the contribution that a predatory pricing rule can make to maximizing pre-entry output by a dominant firm and to minimizing aggregate post-entry production costs.

A. *Pre-Entry Output and Post-Entry Costs*

Limiting post-entry output would, on Williamson's assumptions, induce greater pre-entry output than would cost-based rules. But his analysis suffers from two serious defects. First, his own rule stands condemned by the very reasons he gives for rejecting a "price maintenance" rule—which would, on his assumptions, induce even greater pre-entry output than his output limitation rule. Second, he all but concedes that cost-based rules are superior when actual behavior is not substantially as he assumes it. In fact, however, his behavioral assumptions seem highly questionable.

1. *Welfare Analysis on Williamson's Assumptions: Output, "Price-Maintenance," and Cost-Based Rules Compared*

Any predation rules that allow output expansion after entry have the deficiency of permitting a dominant firm to deter entry with a lower pre-entry output (and higher price) than the firm would need under more restrictive rules. For this reason, there is something to be said for a rule inducing a dominant firm that wishes to deter entry to take the socially beneficial course of expanding pre-entry output.

15. *E.g., id.* at 331-35.

16. *Id.* at 292-93.

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An output limitation rule would produce higher pre-entry output than any cost-based rules if one assumes, as Williamson does, that dominant firms faced with a threat of entry will build a "plant" of such a size that any new entrant would barely cover costs, earning zero profits, if the dominant firm responded to entry in the most aggressive manner allowed by the prevailing rule.¹⁷ On this assumption, the more restrictive the rule on post-entry response, the larger would be the dominant firm's pre-entry plant and output and the lower would be the aggregate cost of post-entry output should entry nevertheless take place.¹⁸

It is in these respects that a post-entry output limitation rule would be superior to a short-run marginal cost (*SRMC*) rule, an average cost (*AC*) rule, or a pure average variable cost (*AVC*) rule. In an ascending degree, these cost rules would allow post-entry output expansion and would thus permit the dominant firm with low output (and high prices) before entry to expand production and thereby force the post-entry price down to the zero-profit point for the new entrant.

Williamson's assumption makes clear, however, that an even greater restriction on post-entry behavior by the dominant firm would induce even greater pre-entry output. One might compel the dominant firm to maintain or restore the pre-entry price, which it could do only by reducing its output to offset the output added by the new entrant. Applying Williamson's assumptions, this rule would induce the dominant firm to expand pre-entry output to the point where the price would barely cover the new entrant's costs. This would be a higher pre-entry output than that induced by the less restrictive output-limitation rule.¹⁹

17. *Id.* at 294.

18. The explanation for the latter effect is rather technical. *See id.* at 300-01, 309-10. In essence, it is attributable to the fact that, on Williamson's assumptions, a dominant firm would build a somewhat smaller pre-entry plant if it can expand output after entry; consequently, post-entry output expansion would be at relatively high marginal cost.

19. Indeed, on Williamson's further assumption that any entrant has access to the same long-run cost curve, *id.* at 295 & n.36, the dominant firm would set pre-entry price at the competitive minimum-cost level. If it seems irrational for a dominant firm to forgo all monopoly profits in order to forestall entry, then Williamson's "limit-pricing" assumption is questionable. We so point out at pp. 1343-45 *infra*.

There is a technical oddity with a price-maintenance rule. Under an output limitation or cost-based rules, a dominant firm could set pre-entry output at such a level that no entrant could even recover costs at the lower post-entry price that its added output would produce. With a price-maintenance rule in effect, however, it might appear that the dominant firm would have to set price below minimum costs to deter a firm that would be satisfied to break even from coming in at most efficient scale (because the dominant firm must reduce his output to maintain the pre-entry price). Realistically, however, the new entrant would or could lose money for two reasons. First, the dominant firm could not be expected to anticipate the new entrant's output, but only to respond

Without discussing this point, Williamson rejects a price-maintenance rule because it requires dominant firms to hold up a "price umbrella" and would be "an invitation for inefficient firms to enter"; he considers the inferior welfare properties of a rule with these consequences "obvious."²⁰ Yet an output limitation is also a price umbrella that induces inefficient firms to enter—less so than a price-maintenance rule but more so than cost-based rules that permit some output expansion by the dominant firm and thus a greater downward pressure on post-entry price.²¹

The dilemma, which Williamson does not appear to have confronted, is that no one of these various rules can at the same time both maximize pre-entry output and minimize the inducement to inefficient entry. In terms of these effects, the alternative rules can be ranked as follows, with a low number indicating superiority:

<i>Rule</i>	<i>Discouraging Inefficient Entry</i>	<i>Inducing Higher Pre-Entry Output</i>
1. <i>AVC</i>	1	5
2. <i>AC</i>	2	4
3. <i>SRMC</i>	3	3
4. output limitation	4	2
5. price maintenance	5	1

In short, one cannot determine which rule is superior on balance without assessing the probable effects of predation rules on (1) dominant firms' pre-entry output decisions, and (2) the likelihood of inefficient entry. If Williamson's assumption is correct that dominant firms will usually adjust pre-entry capacity and output to make entry unattractive, and if such action will usually deter inefficient entry,

to a price fall resulting from the latter's added output by reducing his own output. Thus the new entrant would confront prices intermittently below but never above costs, and full costs could not be recovered. Second, no one would seriously propose that the price-maintenance rule be enforced for more than a limited period of time, for reasons Williamson gives in limiting his output rule to a 12-18 month period. See Williamson, *supra* note 5, at 296. And if the rule were so limited, any potential new entrant would realize that it would be extraordinarily risky to enter where the dominant firm already has the capacity to supply market demand at the competitive price. Such entry would create excess capacity, and competitive pricing after the lapse of the price-maintenance rule would drive price below full costs. This again undermines the validity of Williamson's "limit-pricing" assumption, for reasons elaborated at pp. 1343-45 below.

20. Williamson, *supra* note 5, at 296 n.39, 328 n.110.

21. Furthermore, as Williamson himself notes, cost-based rules are a greater deterrent to potential entry because they create greater uncertainties than an output rule. *Id.* at 312.

then his output limitation rule is superior to cost-based rules but inferior to the price-maintenance rule he rejects.²²

We agree with Williamson that a price-maintenance rule is untenable. But we also believe that Williamson's assumptions are too shaky to support his output rule. To those issues we now turn.

2. *Williamson's Assumptions Analyzed*

Williamson assumes that a dominant firm's pre-entry price and output decisions will be conditioned (a) by the threat of entry and (b) by the legal rules governing post-entry response.

a. *"Limit Pricing"*

Williamson assumes that virtually every dominant firm faced with the threat of entry will "limit" its price below the short-run profit-maximizing level in order to discourage new entry that could erode its market share. He recognizes that dominant firms might behave otherwise, but dubs such behavior "myopic," "massively unsophisticated," and hence highly improbable.²³

To the contrary, "short-run" profit-maximizing can be entirely rational even if it attracts entry. Profits earned now are worth more than profits earned in later years. A dominant firm would not charge a lower "limit" price unless its estimated *discounted* income stream over time from supplying the current share of the market at the lower price would exceed that from initially higher but later lower returns from a reduced market share. Thus, even assuming perfect knowledge of future cost and demand conditions, short-run profit-maximizing may be the economically rational course.

For example, limit pricing would probably make sense only where the dominant firm has a significant and relatively durable cost or product advantage over any potential entrants, or where there are significant economies of scale.²⁴ Otherwise, it could deter entry only by charging a competitive (or close to competitive) price, with an investment in capacity sufficient to supply the greater demand at that price, and by earning only competitive (or close to competitive) returns. Such a limit price would sacrifice the monopoly returns that could

22. Cf. note 19 *supra*.

23. Williamson, *supra* note 5, at 304 & n.59.

24. "If newcomers can enter the market at small scales . . . at unit costs comparable to those of the monopolist, the monopolist or dominant firm is unlikely to possess any short-run pricing strategy option by which it can rationally deter such entry." Scherer, *supra* note 3, at 870-71.

otherwise be earned until new entry reduced price to competitive levels; there would be little or no compensating gain unless (i) a higher price would induce excessive new entry that reduced price below average costs and (ii) the resulting losses would exceed the interim monopoly profits. The latter conditions seem relatively unlikely. More generally, the lower the cost advantage in relation to the differential between the short-run profit-maximizing price and the entry-forestalling price, and the longer it takes for new entrants' capacity to become operational, the less likely it is that limit pricing would be a rational policy.

When future demand and cost conditions are uncertain, as they always are, the attractiveness of limit pricing declines even further. Short-run monopoly profits are much more certain than long-run monopoly profits. Long-run profits are subject to contingencies beyond the firm's control. Costs may rise or demand may fall. The monopolist may be largely or wholly displaced by a new rival with a much cheaper production technique or a much superior product. The monopolist who engages in limit pricing may never get the long-run profits he had hoped to earn by sacrificing profits in the short run.

In short, dominant firms may or may not engage in limit pricing, depending on the circumstances. As far as we know, there is no persuasive empirical evidence that limit pricing is more probable than not, and skepticism seems warranted.²⁵

b. *Effect of Predation Rules on Limit Pricing*

A dominant firm's decision whether to engage in limit pricing will be affected by the rules governing its post-entry conduct. What it can do in response to entry will affect post-entry profits and hence the calculus of whether or not pre-entry limit pricing will pay off. To acknowledge an effect on that calculus, however, is not to say whether or how much a more restrictive post-entry rule (such as an output limit or price freeze) would affect the probabilities of limit pricing in the generality of cases, as compared with a less restrictive rule (such as the *SRMC* price floor). And there is little reason to believe that the effect

25. See F. SCHERER, *INDUSTRIAL MARKET STRUCTURE AND ECONOMIC PERFORMANCE* 224-25 (1970) ("[W]e lack comprehensive evidence on how frequently producers consciously attempt to control the rate of entry through their pricing decisions.") The critical problem with attempting to prove that firms have engaged in limit pricing is that prices below short-run profit-maximizing levels may be due not to entry threats but to present competitive forces, including close substitutes, or to firms' pursuing a "sales-maximizing" rather than a "profit-maximizing" policy; and economic analysis has been unable to disentangle the "causes" from objective market data. The problem is particularly acute with oligopolists, but exists with dominant firms as well. On limit pricing generally, see *id.* at 219-36.

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would often be important. For one thing, the *SRMC* floor does not differ greatly from the output limit where, as is often the case, *SRMC* rises steeply as output nears that at which short-run *AC* is minimized.²⁶ But the problem runs deeper. Williamson would limit output only for twelve to eighteen months, because “a longer period would pose severe administrative problems and weaken the incentives of new entrants quickly to achieve cost parity with the dominant firm.”²⁷ Thereafter the dominant firm would be free to expand output to the point at which price covered average costs.²⁸ In the interim, it apparently would be free to expand capacity and thus position itself to expand output, after the limitation period, at minimum average costs. At that point, the dominant firm could drive out any new entrant who had come in at an inefficiently small scale, even though the entrant had by then overcome “learning curve” and other start-up disadvantages.

The question, then, is how likely is it that any potential entrant who would not otherwise come in would be enticed to enter by a twelve- to eighteen-month restriction on the dominant firm’s output expansion. If unlikely, as we suppose,²⁹ the dominant firm would have little reason to respond to a twelve- to eighteen-month output rule by expanding pre-entry output and capacity.

In short, the dilemma in selecting among predation rules has reappeared. In attempting to avoid the welfare costs and administrative difficulties caused by imposing prolonged output restrictions on dominant firms, Williamson has severely reduced the claimed beneficial pre-entry output effects of his output restriction rule.

B. *Administrative Considerations*

Williamson contends that his output rule would be “eminently” easier to enforce than a variable cost rule.³⁰ We believe the reverse to be true. The difficulties with an *AVC* rule are exaggerated, and those with an output rule are either understated or overlooked.

26. Scherer describes this as the “more realistic case.” Scherer, *supra* note 3, at 881. It is apparently the rule in continuous process industries, and may appear even in production line industries where extra shifts incur higher wage costs. Moreover, Williamson would not in fact freeze the dominant firm’s output, but would permit it to produce 10% above a trended projection of demand, *see* Williamson, *supra* note 5, at 305-06—thus further reducing the difference between the two rules.

27. Williamson, *supra* note 5, at 296.

28. See Williamson’s rules for established firms, *id.* at 336-37, which we assume apply to dominant firms after the 12-18 month period because he states no others.

29. We exclude the rare case where the entrant’s capital facilities have a useful life shorter than the grace period.

30. Williamson, *supra* note 5, at 305-06.

1. *Average Variable Costs vs. "Demand Adjusted Output"*

There are no doubt disputable questions as to (i) which costs should be included in variable costs, (ii) proper accounting valuation of inventories, and (iii) allocations of costs in multi-product enterprises. The first can be resolved by more or less arbitrary decisions.³¹ The second has no apparent relevance to variable costs of current production.³² The third should not be difficult where the firm has had consistent accounting treatment of cost allocations over a substantial period of time. A firm is unlikely to have rigged the treatment in anticipation of future predatory pricing on one (which?) product—to load the figures favorably for predatory pricing on one product is to load them unfavorably for other products, and significant rigging should be more or less readily detectable. Room for litigation remains, of course, but Williamson's output test is no more readily applied, wholly apart from the fact that he also subjects the dominant firm to an *AVC* price floor.³³ Moreover, the concessions he makes to simplify enforcing the output rule may well eviscerate it.

Williamson's rule does not limit the dominant firm to its pre-entry output but to "demand-adjusted" output, which may be greater or less than pre-entry output depending on post-entry changes in demand.³⁴ This test requires a demand forecast, which Williamson thinks would be relatively easy to make.³⁵ Not so. He first suggests that the test is especially simple for products sold in many separate geographic markets: "Since only one or a few of these submarkets are apt to occasion claims of predation, the test is whether output in the suspect markets has increased disproportionately."³⁶ This is delusive. Demand changes commonly will vary in different geographic markets, and a disproportionate output increase in one of them cannot be determined without determining that there had not been a disproportionate increase in "reasonably forecast" demand. To make the determination,

31. See 3 ANTITRUST LAW ¶ 715c, at 172-74.

32. Our rules apply to current production rather than current sales, and thus inventory valuation of final product is not necessary.

33. Williamson, *supra* note 5, at 333 (Rule 1.1).

34. We assume Williamson uses "output" to mean "sales," as he refers to products "sold" in various geographic markets and "trended average of recent sales." If so, however, it may be noted that Williamson's rule would permit a dominant firm to build up inventory during the 12-18 month limit period, thus further enhancing its ability to displace the new entrant when the restriction ends. And how would goods held in inventory be distinguished from a stock of "generational equipment," which he would permit any firm to sell at a market-clearing price?

35. Williamson, *supra* note 5, at 305.

36. *Id.*

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moreover, one would have to define the various geographic markets, and we need not recite here the complexities of market definition.

For “other circumstances,” Williamson would rely on a “simple trended average of recent sales,” and would permit a “ten percent allowance over the trended projection” in computing the output limitation.³⁷ The period for computing the trended average is unspecified, and the problem has no easy solution. It seems virtually certain that any fixed period, covering the wide variety of product markets, would be wrong most of the time and in some instances would yield wildly implausible results. Yet to leave the appropriate trend-averaging period up to a case-by-case determination would virtually destroy predictability and would encourage litigation. The would-be law-abiding dominant firm could act on a reasonable forecast only at its peril.³⁸

Finally, an output limitation rule allowing a ten percent increase in output over one’s best demand forecast may permit actions close to those typically permitted by an *SRMC* rule.³⁹

2. *Firms Subject to the Output Rule*

Williamson confines his output rule to “dominant firm and collusive oligopoly industries.” A dominant firm industry is defined as one in which “the largest firm has a market share of at least sixty percent and entry into the market is not easy.”⁴⁰ Collusive oligopoly is undefined; no tests are suggested for distinguishing between a collusive oligopoly, which is subject to the output rule, and a “loose oligopoly,” which is not. There are several problems here.

a. *Dominant Firm*

Market share offers a reasonable preliminary, though not conclusive, guide to dominance. As a first approximation, some market-share test may be inevitable in any approach that imposes more severe predation rules on a “dominant firm” than on others. But market shares are

37. *Id.* at 305-06.

38. On the other hand, to restore predictability by giving the dominant firm the benefit of any doubts would go far towards eradicating the rule.

39. *See* p. 1345 *supra*. Observe, moreover, that it is frequently claimed that predation occurred not at the time of a new firm’s entry but only after the alleged predator lost significant business to the newer firm. At that point, Williamson’s rule would permit the alleged predator to increase output to the higher pre-entry level (plus all demand growth in the meantime plus 10%). This may diminish further the occasions on which his rule would realistically confine dominant firms more than they would be confined by a marginal-cost floor.

40. Williamson, *supra* note 5, at 292.

extremely crude indicators of market power,⁴¹ and a sixty percent test seems much too inclusive. Uncertain as the profitability of limit-pricing behavior may be for a monopolist, it is even more risky for a firm facing existing rivals accounting for forty percent of the market—rivals whose competition may erode the future profits necessary to make a present sacrifice of profits by limit pricing worthwhile. One might, of course, specify a substantially higher market share, say eighty or ninety percent, but then the output rule would rarely be applicable.

Williamson endeavors to strengthen the validity of his market-share test of dominance by adding a further condition that “entry into the market is not easy.” Yet that condition is hopelessly vague; he supplies no further specification; and economics to date has provided at best only crude methods of empirically determining the height of entry barriers.

b. *“Collusive” Oligopoly*

Williamson’s rule would limit output expansion not only by “dominant” firms but also by firms constituting a “collusive” oligopoly. The extension is questionable on the merits: it seems highly dubious policy to freeze for twelve or eighteen months whatever rivalry there may be among established firms. Such a policy, moreover, is not easily administered. First, demonstrating that a few firms share monopoly power is highly complex. “Shared monopoly” would not be shown by traditional collusion to raise prices, for (i) such collusion implies that the oligopoly is “loose” enough to be unable to collaborate through market signals alone, and (ii) raising prices would ordinarily be inconsistent with the limit-pricing hypothesis. To be sure, one could define “collusive” oligopoly in terms of concentration ratios, such as four firms accounting for seventy-five percent or more of a market. Such concentration measures, however, have serious defects; they are if anything poorer indicators of market power than large single-firm market shares.⁴² And although reliance on them may be inevitable in many antitrust contexts, one cannot pretend that the identification of shared monopoly is a simple matter.

Second, Williamson does not say which oligopolists will have their output controlled. Typically, the top firms in a concentrated industry will vary materially in size. Suppose, for example, an industry of six firms with the following market shares: thirty, twenty-two, eighteen, twelve, ten, and eight. Are all to be restricted? Only the top three?

41. See 2 ANTITRUST LAW ¶ 507, at 330; 3 *id.* ¶ 804.

42. The problems are briefly summarized in 3 *id.* ¶ 847.

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Only the top four? There is no clear basis for resolving this case⁴³ or for designing any general rule for the wide variety of concentrated markets.⁴⁴

3. "New Entrant"

Williamson's output-limitation rule is triggered by "new entry," which his text discussion takes literally. In fact, however, Williamson would also restrict output whenever "fringe firms" made a "new investment," that is, when small "established firms" attempted to expand.⁴⁵ But he does not explain why society should place a price-output umbrella over the expansion of "fringe" established firms, which may not face the particular start-up costs that Williamson stresses for true new entrants: temporary higher production costs until the new firm "learns" the business and higher capital costs for the firm with no track record to give investors confidence in its ability to succeed in that market.

Nor does Williamson face the administrative problems created by his proposal. "Fringe firm" is not defined, nor is the amount of "new investment" that will trigger the output limitation rule. One might define a "fringe" firm as one with a market share of two percent or less. But any such arbitrary solution is inevitably unsatisfactory in some respects. For example, why not shield the expansion of two five-percent firms confronting a ninety-percent rival? Even if we could identify a "fringe" firm, how much "new investment" would trigger the output restriction? Surely not a minor addition to capacity. But even a doubling of capacity by a very small firm should not be the occasion for preventing a dominant firm's or oligopolists' expansion for twelve to eighteen months.

A final example further illustrates that Williamson's output rule lacks the administrative ease he claims for it. Williamson does not consider how his rule would apply to successive "new entries." His formulation would impose an output limitation on a dominant firm for twelve to eighteen months after Firm *A* "enters," and the limitation would apparently continue for another twelve to eighteen months when Firm *B* "enters" late in the first limitation period. This result

43. There is much to be said for letting the smaller two firms expand output in response to new entry. Their expansion would reduce relative concentration in the market, and would have relatively minor effects on the new entrant. On the other hand, it would make little sense to let the 10% firm expand while the 12% firm could not. These points are simply illustrative.

44. For example, what should be done with the firm whose market share has substantially declined in the pre-entry period?

45. Williamson, *supra* note 5, at 292 n.26.

would seem particularly perverse where there is a succession of inefficiently small entries; and the perversity is greatly magnified by classifying new investments by fringe firms as "new entry."

III. Cost-Based Rules

Williamson's output rule would dispose of few, if any, of the litigated predatory pricing claims. He therefore proposes an array of predatory pricing rules resting entirely on a firm's costs. His cost-based rules apparently govern the behavior of dominant firms and collusive oligopolists, absent new entry, as well as pricing by other established firms and new entrants.⁴⁶ They sometimes employ *AVC* and sometimes *AC*, and differentiate the short run, the "intermediate" run, and the long run. His rules also distinguish between "normal" demand-supply conditions and "chronic" excess supply. Application of those rules would be administratively complex, as we shall show later, and they are questionable on substantive grounds as well.

A. *Marginal (or Variable) Costs vs. Full Costs*

Williamson recognizes the merits of a marginal-cost pricing floor (or its *AVC* surrogate) with respect to (i) dominant firms not increasing output in the short run, (ii) any firm selling "generational equipment," (iii) "occasional" price-cutting by established firms, and (iv) markets with "chronic" excess capacity (but apparently only in "declining industries"). He insists on a full cost (*AC*) floor in all other cases—short-run *AC* in the short run and longer-run *AC* in longer timespans—including "sustained or frequently recurring" price-cutting and cyclical declines in demand. The basis for these distinctions is not apparent, and Williamson does not adequately justify them.

In adopting an *AVC* test, Williamson presumably agrees that an *AVC* (or *MC*) test is superior to an *AC* test in promoting the full use of existing fixed resources and in discouraging oligopolistic pricing.⁴⁷

46. Williamson's summary of rules does not track his supporting analyses in two respects. The analysis is headed "predatory pricing among established firms." He then breaks this down into (1) pricing in a "loose" oligopoly under conditions of (a) "stable demand" and (b) "declining demand"; (2) "early stage growth industries"; and (3) "promotional pricing." *Id.* at 321-25. The summary of rules, however, contains none specifically governing pricing by "collusive" oligopolies in the absence of new entry, and none specifically directed to "early stage growth industries." We presume that his rules governing established firms cover both "collusive" and "loose" oligopolies; and that failure to include "early growth" rules in the summary was an inadvertent omission.

47. He does downgrade the welfare losses from restricted output, noting that the main effect is a transfer of income from consumers to producers. Williamson, *supra* note 5, at 290-91. But that is true of any noncompetitive pricing.

Predatory Pricing

He also agrees that such a test serves efficiency in declining industries because it disfavors firms making the greatest additional claims on labor, material, and other resources. But an *AVC* (or *MC*) test has those desirable properties whenever there is excess capacity, be it occasional, “frequently recurring,” cyclical, or secular.

The only basis stated by Williamson for his preference for *AC* in those other situations is that *AVC* (or *MC*) does not necessarily measure long-run efficiency accurately because the firm with a less capital-intensive technology may have higher variable costs but lower average costs.⁴⁸ This possibility cannot carry the weight Williamson puts on it. The instance he cites involves the unusual case of competition among alternative transportation modes, such as railroads and trucks. And he himself observed that “these problems [the differing technology case] may occur infrequently.”⁴⁹ There seems little warrant for sacrificing short-run efficiency gains in the predominant number of cases in order to preserve the infrequent firms that might be more efficient in the long run.⁵⁰

Without good reason to distinguish among various kinds of excess capacity there would also be no reason to distinguish among short, intermediate, and long runs, unless one sought to guard against “predatory investment.” And perhaps Williamson’s demand for a “full cost recovering” price floor for the long run is so intended. But he discusses neither the predatory investment issues nor the many difficulties that inclined us to reject such a prohibition.⁵¹

B. *Administrative Considerations*

We have been most emphatic about the practical difficulties of proving predatory pricing or its absence. Some relatively arbitrary rules are necessary to minimize administrative difficulties, and further contributions may be made on that score. But Williamson’s cost-based rules are no improvement. Williamson relies on *AVC* in several instances, and thus faces the same difficulties charged to us. Unfortu-

48. *Id.* at 321-22.

49. *Id.* at 289 n.20.

50. One might endeavor to confine the *SRAC* rule to cases in which efficiency differentials of the sort described are present, but Williamson did not suggest that course, and it would be quite impractical. A firm seeking to determine the rule applicable to it cannot reasonably be expected to know the *AVC* and *SRAC* of its competitors.

Moreover, as Williamson himself points out, an *AC* rule is more permissive than our *MC* rule when a dominant firm expands output past the minimum *AC* level. Beyond that point *AC* is below *MC*, and hence an *AC* test would give greater latitude to a dominant firm’s effort to harm small rivals. *See id.* at 337.

51. *See* 3 ANTITRUST LAW ¶¶ 718, 719b; Areeda & Turner, *supra* note 2, at 718-20, 722-24.

nately, moreover, AC is also not easily determined. It involves many of the same accounting difficulties as AVC . In the multiproduct firm, its use requires not only the allocation of common variable costs but also the allocation of "overhead." And, very importantly, an essential component of AC is imputed capital cost—or "competitive rate of return"—and its determination involves extensive theoretical dispute and empirical uncertainty.⁵²

Furthermore, three of Williamson's rules require that a lawful price be "cost recovering," which, though not defined, appears to mean long-run MC or, as a surrogate, AC . The accuracy of the surrogate raises difficult questions, and direct calculation of long-run MC involves forecasting uncertainties that neither the alleged predator nor a judge or jury could readily resolve.

Finally, we point out that our proposals make no distinction between "intermediate" and "long" run or between "normal" demand conditions and those of "chronic excess supply," nor between "early stage growth industries" and others. In making such distinctions, Williamson's rules would inject into litigation additional issues that would elude ready resolution.

Conclusion

Professor Williamson has usefully expanded the scope of the economic analysis relevant to appropriate legal rules defining predatory pricing. He fails, however, to establish that his proposed rules are superior to ours either in welfare properties or administrability. Even if his novel output-restriction rule had welfare superiorities—which is highly doubtful—the administrative complications of adding it to cost-based rules count heavily against it. In any event, he does not escape heavy reliance on cost-based rules, and his proposals seem to us to be inferior to ours both in principle and in administrability.

For aught that we have seen, price-cutting warrants neither a more complex nor a more severe approach than we have proposed.⁵³

52. The problems are summarized in 2 ANTITRUST LAW ¶¶ 508-512.

53. Compare Professor Bork's conclusion that *any* rules on predatory pricing "would do much more harm than good." R. BORK, THE ANTITRUST PARADOX 154 (1978).