WHY ABOVE-COST PRICE CUTS TO DRIVE OUT ENTRANTS DO NOT SIGNAL PREDATION OR EVEN MARKET POWER - AND THE IMPLICATIONS FOR DEFINING COSTS

Einer Elhauge

Discussion Paper No. 383

09/2002

Harvard Law School
Cambridge, MA 02138

The Center for Law, Economics, and Business is supported by a grant from the John M. Olin Foundation.

This paper can be downloaded without charge from:

The Harvard John M. Olin Discussion Paper Series:
http://www.law.harvard.edu/programs/olin_center/
WHY ABOVE-COST PRICE CUTS TO DRIVE OUT ENTRANTS DO NOT SIGNAL PREDATION OR EVEN MARKET POWER – AND THE IMPLICATIONS FOR DEFINING COSTS

(forthcoming YALE L.J.)

By Einer Elhauge

Abstract

Recently, European and U.S. officials have made surprising moves toward restricting firms from using above-cost price cuts to drive out entrants. This Article argues that these legal developments likely reflect the fact that scholarly critiques of cost-based tests of predatory pricing have never been satisfactorily addressed, and offers a better explanation about why restrictions on reactive above-cost price cuts are likely to be undesirable. It begins concluding that “costs” should be defined functionally as whichever cost measure assures that prices above costs cannot deter or drive out equally efficient rivals, and shows how applying that functional benchmark resolves numerous apparent anomalies in current predatory pricing law. It then shows that reactive above-cost price cuts do not necessarily indicate an undesirable protection of market power, but rather can be an efficient response to deviations from the output-maximizing price discrimination schedule in competitive markets, particularly in the airline industry that has been the greatest cause of concern. Even when an incumbent does have market power, restrictions on reactive above-cost price cuts have mainly undesirable effects. They fail to encourage entry but do raise post-entry prices in the bulk of cases, where the entrants are or will predictably become as efficient as the incumbent, or would have entered anyway despite relative inefficiency. They can only weakly encourage less efficient entry since the restrictions cannot protect less efficient entrants in the long run, and even in such cases they have mixed effects on post-entry prices since they give incumbents perverse incentives to raise post-entry prices to speed the day when the restriction expires. In all cases, they impose wasteful transition costs and losses in productive efficiency, and they lessen incentives to create more efficient incumbents and entrants. These adverse effects are worsened by implementation difficulties that cannot be avoided no matter how the rules are defined, including that possible definitions of the moment of entry or exit either make the restrictions ineffectual or make their adverse effects last far longer than any benefits from entry, that they will inefficiently increase or decrease innovation rates, and that any price floor or output ceiling will either cause inefficiencies because of either great uncertainty or inflexibility in the fact of changing market conditions.

WHY ABOVE-COST PRICE CUTS TO DRIVE OUT ENTRANTS DO NOT SIGNAL PREDATION OR EVEN MARKET POWER – AND THE IMPLICATIONS FOR HOW TO DEFINE COSTS

By Einer Elhauge

I. THE CURRENT STATE OF LEGAL FLUX AND SCHOLARLY DEBATE
   A. Legal Developments and Ambiguities
   B. The Inadequacy of Traditional Responses in Either Direction

II. WHAT PRICING ABOVE COST MEANS
   A. The Murky and Divided Nature of the Current Debate Over Cost Definitions
   B. Use Whatever Costs Are Variable During the Period of Predatory Pricing
   C. Use Variable Costs of Replacing the Victim’s Output, Not of Producing the Predator’s Output
   D. If Short Term Pricing Can Deter Long Term Investments, Then Use Magnitude of Predator Costs for the Sorts of Costs Variable to the Victim, But Look to the Future to Measure Cost Magnitudes
   E. If (as Likely) Short Term Pricing Cannot Deter Long Term Investments, Then Use Sorts of Costs Variable to Predator During the Period of Predatory Pricing
   F. Conclusion on Proper Cost Measure

III. REACTIVE PRICE CUTS TO DRIVE OUT ENTRANTS NEED NOT INDICATE INCUMBENT MARKET POWER – AND THE IMPLICATIONS FOR DEFINING COSTS AND MARKETS WHERE COMMON COSTS EXIST
   A. Individual Routes in Hub-and-Spoke Systems Cannot Be Assumed to be Separate Markets
   B. Why Competitive Markets Induce Price Discrimination that Maximizes Output
   C. Why Competitive Price Discrimination Will Often Require Reactive Above-Cost Price Cuts

IV. RESTRICTING ABOVE-COST PRICE CUTS HAS ADVERSE EFFECTS EVEN WHEN THE INCUMBENT DOES HAVE MARKET POWER AND IMPLEMENTATION DIFFICULTIES ARE IGNORED
   A. Effects on Likelihood and Consequences of Less Efficient Entry
      1. Consequences for Less Efficient Entrants Who Would Have Entered Without Any Restriction
      2. Effects for Less Efficient Entrants Whom the Restrictions Encourage to Enter
   B. Effects on Likelihood and Consequences of Efficient Entry
      1. Post-Entry Effects
      2. Ex Ante Effects on Creation of More Efficient Entrants
      3. The Restrictions Cannot Reasonably Be Construed or Modified to Eliminate These Effects on Efficient Entrants
   C. Effects For Entrants Who Can Overcome Their Initial Efficiency Disadvantage
      1. When Overcoming Incumbent Efficiency Advantage Necessitates Some Deterioration in Incumbent Efficiency
      2. When Increased Entrant Efficiency Suffices to Overcome Incumbent Efficiency Advantage
      3. Entrants That Share the Incumbent’s Declining Cost Curve.
   D. Ex Ante Effects on Incumbent Incentives
      1. The Likelihood and Legality of Encouraging Limit Pricing
2. Reduced Incentives to Create Efficient Incumbents
   E. Summary of Effects and Assessment of Possible Tradeoffs
   F. The Restrictions Cannot Reasonably Be Construed or Modified to Eliminate the Market Power Requirement

V. UNAVOIDABLE IMPLEMENTATION DIFFICULTIES WORSEN THE ABOVE EFFECTS
   A. When Is the Moment of Entry?
   B. Difficulties in Defining the Incumbent Price Floor or Output Ceiling
   C. Post-Entry Quality Changes
   D. Conclusion on Implementation Difficulties

VI. THE BAUMOL BAN ON IMPERMANENT REACTIVE PRICE CUTS
   A. Post-Entry Effects
   B. Implementation and Incentive Problems
   C. Ex Ante Effects
   D. Conclusion on Banning Impermanent Price Cuts
WHY ABOVE-COST PRICE CUTS TO DRIVE OUT ENTRANTS DO NOT SIGNAL PREDATION OR EVEN MARKET POWER – AND THE IMPLICATIONS FOR HOW TO DEFINE COSTS

By Einer Elhauge

©2002 Einer Elhauge. All Rights Reserved

In the early 1990s, antitrust law on both sides of the Atlantic appeared to have reached a consensus that predatory pricing required proof of below-cost prices.1 But the last few years have witnessed a surprising movement toward prohibiting firms from responding to entry with above-cost price cuts. The European courts got things rolling with a 1996 decision holding it illegal for monopolists to adopt selective above-cost price cuts that sacrificed revenue in order to eliminate entrants.2 Then in 1998, the U.S. Department of Transportation proposed a regulation banning major incumbent airlines from reacting to entry with above-cost price cuts or capacity increases that resulted in “substantially” lower short-term profits than alternative pricing would have.3 In May 1999, the U.S. Department of Justice brought the American Airlines litigation based on the similar theory that it was predatory to respond to entry with business practices that (even if above-cost) “clearly” sacrificed profits.4 This government theory was supported by several expert economists, including the Nobel Prizewinning Professor Joseph Stiglitz.5 And now an important new article by Professor Aaron Edlin proposes the even broader rule that, where an entrant charges at least 20% below the prevailing price, a monopolist cannot respond with any price cut at all for 12-18 months or until its loses its monopoly.6 All these positions restrict reactive above-cost price cuts (or output increases) even if they result in prices that meet (rather than undercut) the entrant’s price, on the notion that buyers would likely stick with the incumbent unless the entrant can offer a lower price.

The basic concept underlying these new legal developments and proposals is hardly new. Some courts and scholars have long thought reactive above-cost price cuts designed to drive out entrants were predatory, and the idea was a standard staple of Socratic dialogue in antitrust classes.7 The Edlin proposal is the same as Professor Williamson’s famous 1977 proposal except that it substitutes a ban on incumbents lowering their price for Williamson’s ban on incumbents increasing

---

1 See infra Part I.A.
2 Id.
3 Id.
4 Id.
7 See Transamerica Computer v. IBM, 698 F.2d 1377, 1386-88 (9th Cir. 1983); International Air v. American Excelsior, 517 F.2d 714, 724 (5th Cir. 1975); Scherer, Predatory Pricing and the Sherman Act: A Comment, 89 HARV. L. REV. 869 (1976); Williamson, Predatory Pricing, 87 YALE L.J. 284, 290-92 (1977) [hereinafter “Williamson, Predatory Pricing”]; Baumol, Quasi-Permanence of Price Reductions, 89 YALE L.J. 1, 2-3 (1979) [hereinafter Baumol, Quasi-Permanence]; see generally III AREEDA & TURNER, ANTITRUST LAW 161-64 (1978) (discussing but rejecting the general theory); III P. AREEDA & H. HOVENKAMP, ANTITRUST LAW 337 (Rev. ed.1996) (specifically considering and rejecting an Edlin-like ban on any price reduction); ANTITRUST ANALYSIS 178 (2d ed. 1974) (offering typical set of Socratic questions to present this (and other) theories of predatory pricing).
their output for 12-18 months after entry. Edlin’s proposal also has much in common, as he acknowledges, with Professor Baumol’s ingenious 1978 idea of permitting reactive price-cuts only if they are quasi-permanent. These are legendary economists. The approach of the E.U. and U.S. Departments in turn has roots in various cases and scholarship that defined a predatory price as one that would not maximize profits unless it could destroy or discipline competitors. The scholars supporting this approach in writings from 1977-81 included such heavy hitters as Professors Sullivan, Ordover, Willig, Joskow, and Klevorick.

By the early 1990s, however, this earlier wave of theories seemed safely buried, in an apparent triumph for the Areeda-Turner position that predatory pricing must be below cost. But now they have resurfaced in these modern legal developments, partly because cases and scholars defending the cost-based rule rested mainly on conclusory definitions or claims about administrability, which never provided a satisfactory theoretical response to the critics nor addressed practical objections to actual industry behavior under such a rule. Critics were particularly provoked by an apparently serious problem confronting the airline industry. On many routes there is an incumbent airline that dominates business at that route and sells at a price well above its costs for that route. Periodically, another airline enters the market at a lower price. The incumbent firm then lowers its price to beat (or match) the entrant. The incumbent never prices below its own costs. But because the entrant has higher costs (or lower quality) it cannot compete at the new price, and is driven out of the market. Once the less efficient entrant is safely gone, the incumbent re-establishes the old price.

The concern is that such reactive temporary price-cuts not only drive out entrants, but deter similar entry in the future, and thus allow the more efficient incumbent to perpetuate monopoly prices that exceed the price the next most efficient firm would charge. Moreover, although airlines present the concern in particularly stark form, this concern can exist in any industry where

---

8 Williamson, Predatory Pricing, supra note, at 295-96, 333-36. This is, however, a real substantive difference. If demand is constant, the addition of entrant output means the Williamson rule would allow the incumbent to lower its price (to maintain its output), whereas the Edlin rule would require the incumbent to lower its output (to maintain its price). For that very reason, Williamson had in 1977 considered and rejected the alternative of banning incumbents from lowering their prices in response to entry, which apparently originated in the 1976 trial testimony of Professor Oxenfeldt. Id. at 296 n.39, 318-20, 328 & nn.109-110, 338 (referring to this 1970s articulation of the Edlin rule as the “price maintenance” or “price umbrella” rule). Id. But other than applying his own conclusory labels that a price maintenance rule would be “protectionist” and protect “competitors rather than competition,” id. at 328, 338, Williamson never really explains why this reduction in post-entry output should be a decisive objection, especially since under his own model the price maintenance rule would also imply higher pre-entry output. Areeda & Turner, Williamson on Predatory Pricing, 87 Yale L.J. 1337, 1340-43 (1978). This is the opening Edlin cleverly pursues.

9 Baumol, Quasi-Permanence, supra note, at 4-6; Edlin, supra note, at 978. Again, this does not mean the differences are not substantively significant. See infra at VI. Baumol’s rule was actually first proposed by Professors Areeda and Turner but rejected by them. Areeda & Turner, Predatory Practices under Section 2 of the Sherman Act, 88 Harv. L. Rev. 697, 708-09 (1975).

10 See infra Part I.A.

11 Id. & note __.

12 See infra Part I.B.

13 This was the direct motivation for the Department of Transportation and Department of Justice efforts. See 63 Fed. Register at 17920-22; 140 F. Supp. 2d at 1145-69 (recounting similar examples). Airline examples also form the main examples motivating the Edlin analysis. See Edlin, supra note, at 942-43, 980-87. This concern with above-cost airline predation even goes back to Professor Baumol. See Baumol, Quasi-Permanence, supra note, at 2.
incumbent firms are more efficient than potential entrants and exploit their market power when entrants are not present to charge prices well above incumbent costs. Indeed, if valid, these concerns would overturn a general current skepticism based on the presumption that predatory pricing is rare because it requires the incumbent to sustain losses on a large number of sales. If harmful predation involves profitable above-cost pricing, it would be far more plausible and prevalent.

This is a serious concern that can no longer be suppressed with conclusory labels or contestable claims about relative administrability. Unless more seriously addressed, these unanswered concerns about above-cost reactive price cuts will likely continue to influence and expand the development of legal doctrines to deal with those concerns in the U.S. and Europe, both for antitrust law and regulatory agencies, as well as bias conclusions about what counts as a cost whenever a cost-based test is still used. It is thus time to take the idea of restricting above-cost reactive price cuts more seriously. But it is not time to adopt that idea. To the contrary, this Article shows that seriously confronting the idea reveals several heretofore unappreciated flaws in such restrictions.

First, such restrictions will often penalize efficient pricing behavior when incumbents do not even have market power. This is because, in many markets, incumbent firms can maximize profits and output by charging more to customers that value the product more highly, thus effectively making them pay a price above their proportionate share of common costs. Even if competition or low entry barriers mean that incumbent firms cannot earn profits from all its customers that exceed economic costs, these firms will often be driven to the profit-maximizing price discrimination schedule in order to cover common costs and maximize output. This includes airlines that do not earn positive economic profits, but do charge more for a ticket that offers one nonstop flight than for the same flight when bundled with a connecting flight. An entrant who cherry picks by selling only to the high value customers at a lower price will thus undercut an output-maximizing price schedule. In order to continue to cover common costs, incumbents will have to react to such entry by lowering their prices to those high-value customers. This reactive above-cost price cut will drive a less efficient entrant out of the market. But this does not mean the price cut protected incumbent market power and harmed efficiency and consumer welfare. To the contrary, it means that the initial discriminatory pricing schedule never indicated market power, and that allowing the normal competitive process of price cuts to drive out the entrant restores the market to an efficient and output-maximizing equilibrium. For airlines, it means that individual routes in a hub-and-spoke system with common costs probably should not be treated as separate markets at all, as critics of airline’s reactive price cuts in individual routes have assumed. Rather, predatory pricing claims probably should instead consider whether the airline’s overall price schedule produced revenue that failed to cover the combination of its common and separate costs.

Second, even if the incumbent does have market power – and we (heroically) assume away the difficulties of implementing the restrictions -- the effects of these restrictions are generally undesirable. This is not because, as commonly supposed, the restrictions exchange a certain short-

---

14 See, e.g., AREEDA & HOVENKAMP, supra note, at 224-25 (collecting sources and linking them to argument that rareness of predatory pricing means courts are more likely to erroneously condemn desirable pricing than correctly condemn predatory pricing); id. at 226 (assuming predatory must involve the temporary sacrifice of revenue). But see Brodley, Bolton & Riordan, Predatory Pricing: Strategic Theory and Legal Policy, 88 GEO. L.J. 2239, 2241 (2000) (arguing that modern economic literature contravenes earlier claims that below-cost predatory pricing was irrational).
term loss for an uncertain long term gain. To the contrary, it turns out to be futile to try to encourage long-term entry with restrictions on reactive above-cost price cuts. Firms that are or will become equally efficient will enter and stay in the market even with the prospect of above-cost price cuts and thus will not be encouraged by the restriction. Less efficient firms will be driven out when any restriction expires by passage of time or loss of monopoly power. On the other hand, the restrictions may be an uncertain short-term gain. Namely, the restrictions may weakly encourage additional entry by less efficient firms despite the lack of long term protection when entry costs are sufficiently low that less efficient entrants find it profitable to engage in hit-and-run entry, staying only for the short run period while the restriction lasts. But even in such cases the effects on prices are mixed because a restriction on reactive price cuts can give incumbents perverse incentives to raise post-entry prices to speed the day when the restriction expires. Further, the restrictions will clearly increase prices and harm consumer welfare in the lion’s share of cases, when entrants are (or will become) equally efficient or when less efficient entrants would have entered even without the restrictions. And in all cases the restrictions will lower productive efficiency and impose wasteful transition costs. Worse, the restrictions will less incentives to create more efficient entrants and incumbents, which will mean higher costs and lower quality for society generally.

Third, these adverse effects are worsened by implementation difficulties that are not avoidable but are rather an inherent consequence of trying to regulate firm pricing, output and responsiveness to entry. While prior analysis has assumed an unambiguous moment of entry, in fact that moment has many possible definitions. Defining entry at the moment when the entrant actually begins sales would, given the normal lead time for entry, allow the incumbent to make anticipatory price cuts that have the same effect as a reactive one. So would any definition of the moment of entry that does not coincide when the time when entry is first foreseeable. Defining entry at an earlier moment when entry is foreseeable (such as when the entrant first begins to plan for entry) would likely mean any 12-18 month restriction would expire by the time the entry starts. One might try to avoid the latter problem by lengthening the period of the price restriction, but the longer the period of restriction the greater the inefficiencies that will result from uncertainties or inflexibilities in the price floors or output ceiling in the face of changing market conditions. Further, any definition of entry that begins before the entrant actually begins sales means that incumbent prices would be artificially elevated during a period where this is not offset by possibly lower entrant prices, thus worsening the likely mix of effects. Another difficulty is that any price or output floor will provoke inefficient increases in product quality, and any effort to clamp down on that by restricting product enhancements will hamper efficient innovation. Finally, any price floor or output ceiling will create additional inefficiencies because they will either embody an inflexible rule, which will cause inefficiencies in market pricing or output given changing market conditions, or a flexible standard, which will create similar inefficiencies because of application imprecision and uncertainties. These implementation difficulties cannot be dismissed as mere administrative concerns since their effect is to raise prices, hamper market flexibility, and distort innovation. These additional adverse effects must thus be added to all the other effects noted above.

In sum, the restrictions will not have any benefit outside the limited case where less efficient entrants face low enough entry costs that they might be encouraged to engage in hit-and-run short term entry and exit against an incumbent who was really exercising pre-entry market power. And

---

15 See infra at I.B, IV.E (collecting current sources stating this is the tradeoff).
even in that case, the net effects are mixed even if we did not consider implementation difficulties, and become even worse when we do. Further, the restrictions will have clear adverse effects for cases involving any other sort of entrant, and also discourage investment and innovation in creating more efficient firms.

These points are all entirely separate from the lively debate about whether even below-cost predatory pricing should be banned. Many scholars think even below-cost pricing should be legal because it inflicts greater losses on the predator than its victims, rarely garners a future recoupment that compensates for losses given time and uncertainty discounts, and can be thwarted by entrant or consumer counter-strategies, all of which make below-cost pricing self-detering and too irrational to be credible. Others have reached a different conclusion about these arguments based mainly on arguments about differential access to capital to cover losses, multi-market reputational effects, imperfect information, or efforts to mislead rivals (or the capital markets than might fund rivals) about predator efficiency or market conditions. This Article takes no position on these disputed issues about the desirability of banning below-cost predatory pricing. Rather, I focus on the separate theoretical grounds for rejecting any restriction on above-cost predatory pricing.

All of which has implications for how courts should define “costs,” an issue now normally resolved by rather atheoretical judgment calls that result in a murky and unsatisfactory doctrine. Any definition of “costs” for a doctrine that bans below-cost pricing but not above-cost pricing must turn on the rationale for treating the two differently. The rationale for treating above-cost pricing as permissible depends, as the above summary makes clear, on the assumption that above-cost pricing could not deter or drive out an equally efficient entrant. Likewise the rationale for banning below-cost pricing must be that (if implemented) it could deter or drive out an equally efficient entrant. It thus makes sense that, if one is going to have a doctrine against below-cost predatory pricing, “costs” should be defined in whatever way satisfies the condition that an above-cost price could not deter or drive out an equally efficient firm. This test has important implications for which cost measure to use. In particular, it clarify several longstanding problems in defining the relevant costs for predatory pricing, including what to do when industries have zero marginal costs, when equally efficient firms that choose a capital intensive structure have lower variable costs, when all firms in declining industries have marginal costs below their variable costs, and when an alleged predator strategically times low prices after it has made capital investments (and thus has low variable costs) but the rival is deciding whether to do the same. In this way, our inquiry into why above-cost prices are not predatory will reveal something important about the nature of what is predatory.

But before addressing those issues, I begin by outlining the recent legal developments and unsatisfactory state of the current debate about above-cost predatory pricing.

---


17 Ordover, *supra*, at 79-80; Brodley, Bolton & Riordan, *supra* note , at 2247-49, 2285-2330 (synthesizing recent literature).
I. THE CURRENT STATE OF LEGAL FLUX AND SCHOLARLY DEBATE

Cost-based tests of predatory pricing have been changed or challenged in recent years in ways that suggest legal developments have been, and will continue to be, influenced by the underlying debate in antitrust economic scholarship on above-cost predatory pricing. After detailing these legal developments, I explain why the easy but largely conclusory answers offered by both sides in the current legal and scholarly debate cannot resolve the issue in either direction, which instead requires the more in depth analysis that the rest of this Article takes up.

A. Legal Developments and Ambiguities

In the early 1990s, the law on predatory pricing appeared relatively settled. The 1991 decision of the European Court of Justice in AKZO held that when a firm with dominant market power prices below average variable costs, those prices are presumed abusive, and that when it prices above average variable costs but below average total costs, its prices are abusive if they are intended to eliminate a competitor. This seemed to imply that prices above average total costs could not be abusive even if coupled with such an intent. And in 1993, the U.S. Supreme Court in Brooke decided that one necessary element of predatory pricing was proof that the defendant priced below incremental costs. Brooke did not resolve which measure of costs should be used, and the lower U.S. appellate courts were divided between those that required prices below average variable cost (or short run marginal cost) and those that would also entertain claims of prices below average total costs (or long run marginal costs). But while there was plenty of disagreement on such issues, at least there appeared to be common ground on the proposition that unilaterally set prices

---

18 A fixed cost is a cost that does not vary with output levels. A variable cost is a cost that varies with output levels. Total costs are the sum of fixed and variable costs. Average variable costs are the sum of variable costs divided by output. Average total costs are the sum of total costs divided by output. Average total cost thus always exceeds average variable cost since it is the sum of average fixed and variable costs. See Carlton & Perloff, Modern Industrial Organization 28-99 (3rd ed. 2000); Areeda & Turner, supra note , at 155; Areeda & Hovenkamp, supra note , at 320-21.

19 See AKZO Cmemie v. Commission, [1991] European Court Reports I-3359, ¶¶70-73. Just as U.S. Sherman Act §2 makes it illegal to have monopoly power and engage in unilateral exclusionary conduct, E.U. Treaty 86 makes it illegal to have a dominant position and engage in unilateral abusive conduct. Id. ¶¶34-75. But U.S. and E.U. law differ in the precise degree of market power necessary to satisfy the first element, and the type of conduct deemed to anticompetitively violate the second element.

20 In addition to requiring prices below incremental costs, Brooke required proof of two other elements whose precise definition varied with the antitrust statute in question: (1) sufficient market power to have the requisite anticompetitive effect in the market where the predatory pricing is occurring, and (2) a sufficient likelihood of recouping the investment in below-cost prices after rivals were eliminated or disciplined. Brooke Group v. Brown & Williamson, 509 U.S. 209, 222-25 (1993) (adopting somewhat higher standards of market power and recoupment likelihood under Sherman Act §2 than under the Robinson-Patman Act).

21 Brooke, 509 U.S. at 222 n.11.

22 Areeda & Hovenkamp, supra note , at 229-230, 242-43, 349, 368, 395.

23 These disagreements extended beyond the right cost measure. The European Court of First Instance has interpreted E.U. law to reject any requirement to prove a likelihood that the defendant could recoup predatory prices. See Tetra Pak v Commission, Case C-333/94 P, [1996] ECR I-5951. E.U. law also rejected the proposition that the dominant position and predatory pricing have to be in the same market, as long as the firm has a dominant position in some market and the leading position in the market where the predatory pricing happened. Id. However, the E.U. Advocate General had opined that E.U. law actually should properly be interpreted to require a recoupment test, see
had to be below some measure of costs to be considered predatory or illegal.

But now, the law on above-cost predatory pricing is in a considerable state of flux. In 1996, the European Court of First Instance in Compagnie Maritime Maritime sustained a European Commission ruling that it constituted an abuse of a dominant position to adopt a “fighting ships” strategy of responding to entry by making selective price cuts even though the resulting prices were above costs.24 The Commission relied on three factors: (1) the price cuts were reactive and selective, being adopted in response to entry and only for those ships whose sailing dates directly competed with the entrant; (2) the reduced prices met (and once beat) the entrant; and (3) the price cuts reduced defendant profits compared to what they would have been with higher prices.25 The Commission got around AKZO by saying that, although this practice was not “predatory” pricing, it was nonetheless abusive.26 The Court of First Instance affirmed, ruling that these three objective criteria meant the reactive above-cost price cuts did not reflect “normal competition” and were thus abusive.27 The Court also suggested more broadly that any above-cost price cut (or other conduct) whose “real purpose” was to strengthen a dominant position by eliminating a competitor was illegal, noting internal documents indicating that the defendants purpose was “getting rid” of any independent competitors.28

The Opinion of the Advocate General recommended affirming the Court of First Instance on these holdings.29 Rather than getting around AKZO by the dubious technique of saying that here the alleged misconduct was not labeled “predatory pricing,” he simply argued that, while AKZO established the circumstances under which below-cost prices were abusive, it did not affirmatively hold that above-cost prices could never be abusive as well.30 In deciding whether the challenged above-cost price cuts were abusive, the Advocate General relied partly on the defendants’ “avowed purpose” of eliminating its competitor, which he observed was supported by both the subjective evidence and the three objective criteria noted above.31 But he also stated that the selectivity of the price cuts was “important,” noting the case would have been more difficult had the defendants adopted a general price cut, because such a general price cut both (1) would have benefitted all its customers and (2) could not have been subsidized by defendants’ monopoly prices on the other


24 Compagnie Maritime Belge Transports v. Commission, Judgment of the Court of First Instance, ¶138-153, 1996 ECJ CELEX LEXIS 8660 (Oct. 8, 1996). This case often goes under the name Cewal.

25 Id. ¶139-41.
26 Id. ¶¶ 129, 139.
27 Id. ¶¶ 144-45, 148, 153.
28 Id. ¶¶ 146-148.
30 Id. at ¶¶ 123-130. In doing so, he echoed a pre-Brooke development in the U.S. Court of Appeals for the Ninth Circuit, which first made a ruling just like AKZO about the relevant presumptions depending on whether prices were below average variable costs or between those costs and average total costs, see William Inglis & Sons Baking v. ITT Continental Baking, 668 F.2d 1014, 1035-36 (9th Cir. 1982), and later held that this earlier holding did not mean that prices above average total costs could not be predatory too, see Transamerica Computer v. IBM, 698 F.2d 1377, 1386-88 (9th Cir. 1983).
31 Id. ¶¶ 119-20, 135.
sailings. This suggested that a purpose of eliminating rivals might not suffice unless the price cuts were selective. However, then he indicated that proof of “high barriers to market entry” might substitute for selectivity in proving that the reactive price cut was not “competition on the merits.”

Since high entry barriers are necessary to prove dominant market power, this possibility would effectively eliminate any selectivity limit on this doctrine. Further, he also noted that, in the shipping industry, once a ship was set to sail, the short run marginal cost of taking an additional container is near zero. This would seem at most a reason to look to average total cost (or long run marginal cost) rather than short run marginal costs, not a reason to dispense with requiring prices below some cost measure, so it is unclear how much weight he intended to put on this factor. Finally, he indicated that it mattered that the defendants “enjoyed not merely a dominant position but, as it says, a de facto monopoly,” thus suggesting that this above-cost predation theory might require more than the normal evidence of a dominant position. The Opinion of the Advocate General thus left rather unclear the precise contours of the doctrine he was advocating.

The European Court of Justice affirmed, unfortunately without making the outside limits of the doctrine much clearer. The Court simply held that it was not necessarily to rule generally on when it was illegal for a dominant firm to make selective reactive above-cost price cuts to meet an entrant, but that such price cuts were illegal when the firm had over 90% market share and had the avowed purpose of eliminating the entrant. Likewise, in Irish Sugar, the European Court of First Instance held that it was illegal for a firm with 88% market share to engage in above-cost price cuts that were selectively adopted at the border in order to deter entry from an importer.

So at a minimum, European law now makes it illegal for a firm with a market share near 90% to respond to entry with above-cost price cuts that are selectively limited to the areas where the entrant competes for the purpose of driving that entrant out. Which other above-cost price cuts illegal might be illegal under European law remains unclear. But the cases suggest the European law...
doctrine might ultimately be interpreted to mean that any above-cost price cut made by a monopolist in reaction to entry is illegal if intended to drive out an entrant, and that such an intent can be established not just by subjective evidence but by objective proof that the resulting price failed to maximize the monopolist’s short run profits.

The law regarding above-cost predatory pricing has also been in some flux on the other side of the Atlantic. In 1998, the U.S. Department of Transportation proposed a regulation banning major incumbent airlines in their hub markets from responding to entrants by cutting prices (or expanding capacity) to a level that, although above-cost, resulted in “substantially” lower short-term profits than alternative pricing (or capacity) would have. The regulation would have defined such pricing as an unfair method of competition under the statute giving the Department of Transportation authority to regulate the airline industry. The Department of Transportation limited its regulation to “major” carriers in their “hub markets” based on evidence that prices in those hub markets were higher than prices elsewhere. The Department assumed this effectively established a market power to charge supracompetitive prices in those hub markets, but did not say it would require a degree of market power sufficient to constitute monopoly power. After receiving comments, the Department of Transportation at the end of the Clinton Administration announced a decision to pursue this strategy by adjudication rather than by regulation.

This regulatory proposal illustrated an important point. Even if barred by antitrust law, theories for banning above-cost predatory pricing can influence the myriad of regulatory agencies that have the power to adopt different rules for a particular industry if they become convinced that would advance consumer welfare. True, the Bush Department of Transportation itself seems unlikely to pursue such an approach since its new head filed comments opposing the proposed regulation before he took office. But no administration is forever, and there remain plenty of other federal or state regulators who might find the proposal more attractive. Thus, the issue remains important in the U.S. even if federal antitrust law were settled.

But in fact, federal antitrust law is not so settled. Notwithstanding *Brooke*, the U.S. Department of Justice in May 1999 brought the American Airlines litigation based largely on the same theory as the Department of Transportation Regulation. Like the Department of Transportation, the Department of Justice’s general theory was that it must be predatory for a monopolist of an airline route to respond to entry by expanding capacity or lowering prices in a way that sacrificed short term profits (even if above cost) since such a strategy could only be explained by the long run goal of driving the entrant out of the market. In the alternative, and in an effort to

---

41 63 Fed. Reg. at 17920.
42 Id. It is not at all clear such evidence does actually show market power in individual routes. See infra III.
stay within *Brooke*, the Department nonetheless offered four possible cost tests. Two of the cost tests used a measure of fully allocated total airline costs that the Department is no longer pressing on appeal.\(^{46}\) The other two cost tests, which are being pressed on appeal along with its general theory that sacrificing profits is predatory,\(^{47}\) are of more interest here.

Test One measured whether the net revenue on the route declined after the capacity was added, concluding that if it did then the incremental cost of the capacity increase exceeded its incremental revenue.\(^{48}\) But this test necessarily takes into account the fact that adding the incremental capacity lowered prices (and thus profits) on the nonincremental flights. This amounts to requiring a monopolist to equate marginal revenue and costs, which is precisely the sort of calculation that causes economics texts to predict a monopolist will harm consumer welfare by setting a profit-maximizing monopoly price that is *above* marginal cost.\(^{49}\) Thus, although framed as a test of the revenue and cost of the incremental added capacity, this test in effect either subtracted foregone profits on the rest of the route from “revenue” or added those foregone profits to “costs” – either of which converted the seeming price-cost test into a profit-maximizing obligation.

For example, suppose an airline earned $20.6 million on a route that cost $18 million to operate, and was contemplating adding a flight that would cost $500,000 to operate, bring in $1 million in revenue from passengers on that flight, but reduce revenue for the rest of the route by $600,000 to $20 million. Under Test One, the Department would not compare the additional flight’s $1 million in revenue to its $500,000 in costs. Instead, the Department would condemn the capacity addition as predatory because it reduced net revenue (i.e., profits) from $2.6 million to $2.5 million. This effectively either: (a) subtracts from the flight’s $1 million in revenue the $600,000 in profits foregone on the rest of the route (resulting in an incremental revenue of $400,000 that was less than the $500,000 in that flight’s costs), or (b) adds to the $500,000 in costs the opportunity cost of the foregone profits on the rest of the route (resulting in an incremental cost of $1.1 million that exceeded the flight’s $1 million in revenue). While I will defer until Part II how one should measure costs, it is vital for analytical clarity that whatever cost measure is used cannot effectively include foregone profits. Otherwise, one cannot keep predatory theories based on a failure to maximize short-term profits analytically distinct from theories based on pricing below costs in a way that allows for proper assessment of their differing effects. The district court rejected this effort to redefine revenue and costs in a way that imposed a duty to maximize profits, as have other courts in the past.\(^{50}\) But,

---

\(^{46}\) These two tests (called test two and three) measured whether total revenue on the route was less than fully allocated total airline costs for the route either generally (test three) or after the allegedly predatory capacity increases (test two). See U.S. v. AMR, 140 F. Supp. 2d 1141, 1179, 1203 (D. Kansas 2001). See also *id.* at 1175-78 (describing fully allocated cost measure). The district court rejected these tests for two reasons. First, they used total costs rather than incremental costs. *Id.* at 1203. Second, they reflected an arbitrary allocation to individual routes of the joint costs incurred by running a hub-and-spoke flight system. *Id.* at 1203-04. Given that the Department defined the market as the individual route, this meant this cost measure included costs incurred in markets other than the one in which the alleged predatory pricing was occurring. See generally *infra* III (discussing hub-and-spoke airline economics). The government has not appealed the rejection of these two cost based tests. See U.S. Appellate Brief at 1-71.


\(^{48}\) 140 F. Supp. 2d at 1179, 1200; U.S. Summary Judgment Memo at 31; U.S. Appellate Brief at 21-22.


\(^{50}\) See 140 F. Supp. 2d at 1179-80, 1200-02; Rebel Oil v. ARCO, 146 F.3d 1088, 1095 (9th Cir. 1998); Baumol, *Predation and the Logic of the Average Variable Cost Test*, 39 J.L. & ECON. 49, 71 n.20 (1996) (collecting cases) [hereinafter Baumol, *Predation*].
surprisingly, the Bush Administration has appealed the rejection of this cost test.51

The Department’s other test compared the revenue earned from the passengers on the added capacity to the incremental costs of the added capacity.52 The district court concluded that this was also a profit-maximization test, citing testimony by DOJ expert Professor Stiglitz that this test also embodied a requirement that the defendant not pass up a clearly more profitable alternative.53 But while this accurately characterized Test One, this other test condemned a capacity increase only if it was by itself money-losing in the sense that the revenue earned on the new capacity was less than the cost of adding that capacity, thus putting aside any effect the capacity increase might have on prices and profits on the nonincremental capacity. For example, the hypothetical described in the paragraph above would not be predatory under this test because the $600,000 in revenue for the additional capacity was greater than its $500,000 cost. Thus, this test was not the same as a profit-maximization test; instead it amounted to avoiding capacity increases whose marginal cost inefficiently exceeded their price. Unfortunately, the government’s briefing did not emphasize this distinction, probably because its general theory (and Stiglitz’s) was that it was predatory to sacrifice short-run profits in order to drive out a rival, but rather defended this test along with Test One on the ground that it did not require profit-maximization but only an examination whether the capacity expansion was clearly less profitable than the alternative of not expanding capacity.54 The district court correctly rejected this as mere semantics, holding there was no substantive difference between a claimed duty to choose a “more” profitable alternative and a duty to “maximize” profits, though the court somewhat unfairly failed to acknowledge that the Department position did condemn only business practices that “clearly” did not maximize short-term profits.55
However this case comes out, the temptation to redefine price and costs in a way that effectively prohibits reactive price cuts that sacrifice short term profits will remain strong for any court or enforcement agency persuaded by the underlying theory that such reactive price cuts are undesirable regardless of the predator’s true costs. Even if federal antitrust courts are not willing to go quite so far, theoretical concerns about reactive above-cost price cuts continue to influence U.S. courts about which cost measure to use under \textit{Brooke}. In particular, federal courts remain divided about whether to retain antitrust review for pricing that is above marginal or variable costs but below average total costs.\textsuperscript{56} There are many other reasons to disagree about which cost measure to use, including which best assures equally efficient firms will not be excluded in particular cases.\textsuperscript{57} But courts allowing claims above marginal or variable costs, including most notably the 10th Circuit decision on which the American Airlines case was based, have also been influenced by the same concerns about monopolists who use reactive price-cuts to drive out entrants that underlie the proposals to ban above-cost predatory pricing.\textsuperscript{58}

Nor have U.S. courts been shy about changing antitrust law in more dramatic ways as theories of antitrust economics develop. The list of antitrust cases overruled as a result of new economic theory is long indeed.\textsuperscript{59} Here that possibility is enhanced because many regard \textit{Brooke}’s statement requiring below-cost pricing as dicta.\textsuperscript{60} Thus, the existing \textit{Brooke} rule might well be

\textsuperscript{56} AREEDA & HOVENKAMP, \textit{supra} note, at 229-230, 242-43, 349, 368, 395 (collecting the surprisingly diverse appellate authorities).

\textsuperscript{57} See \textit{infra} at II.

\textsuperscript{58} See, \textit{e.g.}, \textit{Instructional Sys. Dev. Corp. v. Aetna Cas. and Sur. Co.}, 817 F.2d 639, 648-49 (10th Cir.1987) (condemning prices above variable costs but below total costs because the defendant dropped prices sharply when faced with a rival and then raised prices back to high levels once the rival exited, and in doing so was knowingly sacrificing short-term profits to drive out its rivals).

\textsuperscript{59} See, \textit{e.g.}, \textit{State Oil v. Khan}, 522 U.S. 3 (1997) (overruling per se rule against vertical maximum price-fixing announced in prior Supreme Court case); \textit{Continental T. V. v. GTE Sylvania}, 433 U.S. 36 (1977) (overruling per se rule against vertical non-price restraints announced in prior Supreme Court case); \textit{Copperweld v. Independent Tube}, 467 U.S. 752 (1984) (overruling doctrine that a corporation could conspire with a wholly owned subsidiary); \textit{Monsanto v. Spray-Rite}, 465 U.S. 752 (1984) (overruling prior cases that allowed vertical distributional restraints to be based on evidence that a manufacturer demanded it and the distributor acquiesced); \textit{BM1 v. CBS}, 441 U.S. 1 (1979) (holding that, although the per se rule against price-fixing excludes justifications, it does not apply to an agreement that literally involves price-fixing but had a procompetitive justification); \textit{Northwest Wholesale Stationers v. Pacific Stationery}, 472 U.S. 284 (1985) (holding that per se rule against boycotts did not apply when the concerted refusal to deal had a procompetitive justification); \textit{United States Steel v. Fortner Enterprises}, 429 U.S. 610 (1977) (holding that per se rule against tying required independent proof of tying market power even though prior cases had not required such proof); \textit{Tampa Electric v. Nashville Coal}, 365 U.S. 320 (1961) (replacing per se rule against exclusive dealing that involved substantial foreclosure with the rule of reason); \textit{Standard Oil v. United States}, 221 U.S. 1 (1911) (adopting the antitrust rule of reason, which had been explicitly rejected in prior cases). Even Justice Scalia has written an opinion for the Court agreeing that, despite his own penchant for textual interpretations and the supposed super-strong presumption against overturning statutory precedent, courts are free to develop and change federal antitrust law in a common law fashion. See generally \textit{Business Electronics v. Sharp Electronics}, 485 U.S. 717, 731-33 (1988).

\textsuperscript{60} Because the actual ground for decision in \textit{Brooke} was that plaintiff failed to establish the element of likely recoupment, prominent scholars have characterized its statement requiring below-cost pricing as dicta. AREEDA & HOVENKAMP, \textit{supra} note, at 230-32, 235, 240-41, 318, 347, 359-60. But any holding requiring recoupment by implication requires pricing that incurs some sort of losses, otherwise there is nothing to recoup, as Edlin acknowledges. See \textit{Edlin, supra} note, at 942 n.4. Although this forecloses Edlin’s own approach, requiring a likelihood of recoupment does not (as Edlin supposes, \textit{id.}) necessarily foreclose all bans on above-cost predatory pricing. In particular, it would not necessarily foreclose the Department of Justice position banning only reactive above-cost price cuts that sacrifice
short term profits, a “loss” which could be said to be “recouped” after the entrant exits. See AREEDA & HOVENKAMP, supra, at 256-57 (recoupment can be of foregone profits). This position might find obstacles in Court language requiring a likelihood of the defendant “recouping its investment in below-cost prices,” and interpreting its past cases to hold that lowering prices to an above-cost level cannot inflict antitrust injury. 509 U.S. at 224. Nonetheless, one could imagine the argument that, strictly speaking, this phrasing and interpretation was also dicta, and that the narrow holding was to require only proof of some recoupment. My point is not to resolve that issue here, however, but only to observe that these arguments about Brooke’s requirement of below-cost pricing possibly being dicta marginally increase the likelihood of a change in law (or could serve for the pretext for one) if such a change were deemed desirable as a matter of antitrust policy.


However, some recent cases suggest the importance of emphasizing that the issue whether and when a straight price that is above cost should be illegal must be distinguished from the situation when a seller conditions an above-cost discount on the buyer taking all or a high percentage of its purchases from the seller. Two recent decisions applying Brooke to the latter contain language indicating they may have mistakenly confused the issues. See LePage’s Inc. v. 3M, 277 F.3d 365, 2002 WL 46961, at *9-11 (3rd Cir. 2002), vacated for rehearing on en banc; Concord Boat v. Brunswick Corp., 207 F.3d 1039, 1061-62 (9th Cir. 2000). But in fact the condition means that the latter, while not constituting predatory pricing, can amount to de facto exclusive dealing under both U.S. and European law. See IIIA AREEDA & HOVENKAMP, ANTITRUST LAW ¶768B3, AT 151 (1996); XI HOVENKAMP, ANTITRUST LAW ¶1807, at 115-18 (1998); Virgin/British Airways, European Commission Decision, IV/D/2/34.780, ¶¶97-107 (July 14, 1999); Michelin, Case 322/81, ECR 3461 (1983); Hoffman-La Roche, Case 85/76, ECR 541 (1979). Other language in LePage’s and Concord Boat indicate that the courts recognized this doctrine, but mistakenly seemed to assume a discount was not conditioned when a higher discount amount depended on the buyer buying a high percentage from the defendant or when the buyer voluntarily agreed to accept the discount. 2002 WL 46961, at *12; 207 F.3d at 1044-45, 1059-60, 1063-64. Still there is also other language indicating that the actual holdings of the cases can be limited to the proposition that the claims of de facto exclusive dealing were not supported by sufficient proof that the discounts produced substantial market share foreclosure. 2002 WL 46961, at *12-13; 207 F.3d at 1059-60.

If loyalty rebates were never illegal unless the resulting price were below cost, then any firm could immunize its exclusive dealing agreements from antitrust scrutiny by the simple expedient of inflating the price and then offering a rebate conditioned on exclusivity. The key reason to treat such loyalty rebates differently is that, by foreclosing the market share rivals need to reach the minimum efficient scale, loyalty rebates can raise rivals’ costs or exclude it from

-13-
B. The Inadequacy of Traditional Responses in Either Direction

Why has the early 1990s caselaw that seemingly established the cost-based rule proven so vulnerable? Probably because the underlying concerns about above-cost predatory pricing have never been satisfactorily addressed. One unfortunate tendency has to declare victory by definition, by asserting a “predatory” price is below cost or that low above-cost prices involve “competition on the merits.” But these are mere formalistic labels which do not answer the substantive question concerning what the law should define as “predatory” pricing or “competition on the merits.” Indeed, the European Commission had a very similar test, whether reactive above-cost price cuts that intended to eliminate rivals involved “normal competition” and simply drew the opposite formalistic conclusion that they do not. Assertions about such formalistic labels in either direction do not really aid the inquiry.

Another unfortunate tendency has been to dismiss bans on above-cost predatory pricing with the observation that they protect only “higher cost” or “less efficient” firms. This observation is important, but does not by itself dictate any conclusion about the social desirability of keeping those less efficient firms in the market, and thus should not be permitted to end the analysis by epithet. Even less efficient firms play a useful role in constraining the prices that more efficient firms can charge. If proponents are right that restricting reactive above-cost prices cuts would increase entry, lower incumbent prices, and enhance consumer welfare, then keeping less efficient firms in the market is desirable, and courts could re-define “predatory pricing” to cover (and “competition on the merits” to exclude) any undesirable reactive above-cost price cuts.

The more substantive response has traditionally been to concede that restricting above-cost price cuts often does have long-term benefits on entry and pricing, but to observe that: (1) they would raise short-term prices (and lower output) following entry, and (2) it is administratively

---

63 See generally Thomas G. Krattenmaker & Stephen C. Salop, Anticompetitive Exclusion: Raising Rivals’ Costs to Achieve Power Over Price, 96 YALE L.J. 209, 214 (1986). When they do so, they exclude rivals not by virtues of advantages they earned by improving their own efficiency, but by worsening the rivals’ efficiency. Rewarding the former is socially desirable. Rewarding the latter is not.


65 See, e.g., Brooke, 509 U.S. at 223; Areeda & Hovenkamp, supra note , at 223; Areeda & Turner, supra note , at 150-51, 161; Areeda & Turner, supra note , 88 HARV. L. REV. at 706-07, 711.

66 In fact, in every market there is some firm that is more efficient than the others. Workable competition is still valuable on such markets. Indeed, even when one firm is so much more efficient that it can be said to be dominant, the existence of the less-efficient firms constrains the pricing of the most efficient firm. See, e.g., Viscusi, Vernon & Harrington, Economics of Regulation and Antitrust 164-66 (1998); Carlton & Perloff, supra note , at 107-118.

67 See Edlin, supra note , at 945-49.

68 Even if prices were lowered, there is the additional question whether this benefit to consumer welfare offsets the loss of productive efficiency that results from transferring market share to a less efficient producer. See infra at IV.
difficult to sort out when the long run benefits outweigh the short run costs. But point (1) is hardly a satisfying riposte to the claim that the posited adverse short run effects never materialize, or are outweighed by long run benefits, because the restriction on reactive above-cost price cuts would encourage entry (or lower everyday incumbent prices) that otherwise never would have occurred. And point (2) lends itself to the critique that price-cost comparisons are themselves difficult to administer, and to efforts to make the restrictions more administrable by banning all reactive price cuts or output expansions (like Edlin or Williamson) or at least those that clearly or substantially sacrifice short term profits (like the Departments).

For example, the leading antitrust treatise notes no particular administrability problem with an Edlin-like ban on any price reduction, but dismisses it with the simple observation that it would lower the incumbent’s post-entry output. Why this objection should be a showstopper is never explained, which seems odd since one of the authors had previously observed that such a price maintenance rule increased pre-entry output. This treatise also considers a price floor at the short-term profit-maximizing level (like the one developing in the E.U. and proposed by the U.S. Departments), but dismisses it purely on grounds it is inadministrable. Moreover, one of the offered inadministrability arguments -- that the incumbent might be sacrificing short term profits to avoid government regulation or develop the market -- seems a relatively implausible explanation for timing price cuts to respond to entry. In fact, both price maintenance and price floor rules create reduced post-entry output and administrability problems, and both those problems are only part of a larger and more fundamental set of problems, as this Article will explain.

By the same token, the debate is also not resolved in the other direction by asserting that reactive above-cost price cuts must be illegal because they fit the test of being designed to maintain monopoly power by excluding rivals. As we saw, some language in the European caselaw seems to embrace this argument. Likewise, in the U.S., proponents have argued that reactive above-cost pricing must be illegal because it fits the basic Grinnell test of being designed to exclude rivals and maintain monopoly power. Grinnell stated:

"The offense of monopoly under § 2 of the Sherman Act has two elements: (1) the possession of monopoly power in the relevant market and (2) the willful acquisition or maintenance of that power as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident."

The second element is is often rephrased as requiring “exclusionary conduct,” which is conduct that

---

69 Brooke, 509 U.S. at 223-24; Barry Wright Corp. v. ITT Grinnell Corp., 724 F.2d 227, 231-35 (1st Cir. 1984) (opinion of then-judge Breyer); Areeda & Hovenkamp, supra note , at 228, 318, 327-28, 332-46; Areeda & Turner, supra note , at 161-64, 166-68; Areeda & Turner, supra note , 88 Harv. L. Rev. at 708-09; Areeda & Turner, supra note , 87 Yale L.J. at 1339; Areeda, Antitrust Analysis 196-97 (3rd ed. 1981).
70 Edlin, supra note , at 945, 956, 977.
71 But see infra at V (showing why such efforts fail).
72 Areeda & Hovenkamp, supra note , at 332, 337.
73 See supra note __.
74 Id. at 335-336.
75 See supra I.A.
76 See U.S. Summary Judgment Memo, supra note , at 14-15; Edlin, supra note , at 965.
tends to exclude rivals other than “competition on the merits.”

But, as antitrust scholars have long understood, the problem with the Grinnell test is that it is either wrong or conclusory. Often a firm deliberately tries to exclude rivals and acquire or maintain monopoly power with superior products, business acumen, or other conduct that could be considered competition on the merits. The two are not mutually exclusive concepts, as Grinnell’s “as distinguished from” language wrongly suggests. In practice, this tension is resolved by court decisions labeling particular conduct that excludes rivals and enhances monopoly power as being either “predatory” and “anticompetitive” on the one hand, or “business acumen” and “competition on the merits” on the other. But without some underlying normative theory to explain when to apply which label, such caselaw would merely be conclusory. The question in the end must always be whether particular challenged conduct drives rivals out of the market in an improper manner, and that requires a normative inquiry into whether the methods used are socially undesirable and, if so, whether those undesirable methods can be selectively discouraged without unduly discouraging desirable behavior.

Nor is the matter settled, as the European Commission and U.S. Departments apparently thought, by evidence that the defendant has sacrificed short run profits and is thus engaging in behavior that could only be profitable if it had the long term aim of acquiring monopoly power and earning monopoly returns. True, such a definition of “predation” has long been advanced by many courts and a long line of distinguished antitrust scholars. But the problem is that this definition would apply equally to all sorts of desirable conduct. It would apply to any monopolist that does not fully exploit its monopoly power, because a failure to charge the full profit-maximizing monopoly price could only be explained by a desire to discourage further entrants. This would amount to a legal duty to engage in monopoly pricing. Worse, this definition would apply to any firm that invests research and development funds to invent a new innovative product that will allow
it to drive out rivals and earn monopoly rents.\textsuperscript{82} It would also apply to any firm that sacrifices short
term profits by investing in building new facilities, training personnel, or making organizational or
distributional changes in order to improve costs or quality and drive out rivals.\textsuperscript{83} Sacrificing short-
term profits to build a better or cheaper mousetrap or organization is socially desirable even though
the monopolist is motivated not by any social benefits but by the prospect that eliminating rivals will
allow it to reap long term monopoly profits. Indeed, the prospect of those long term monopoly
profits are desirable precisely because they encourage such efforts.

The proper question thus cannot be whether the defendant sacrificed short-run profits or
intended to gain a monopoly. It is whether the \textit{means} it chose to do so are undesirable in a way
antitrust law can regulate without having unduly negative effects on other desirable conduct. And
that requires an assessment of the desirability of the consequences of adopting any restriction on
reactive above-cost price cuts. It is to that task that I turn next.

\section*{II. DEFINING THE CORRECT COST MEASURE}

The effects one predicts from a restriction on above-cost price cuts obviously depend on
what counts as a “cost.” The dominant practice has been to rely on a series of judgment calls about
both what sorts of costs generally seem sensible to include and when certain cases seem to suggest
ad hoc exceptions to those cost measures would be desirable. But this can hardly offer a satisfactory
or clear resolution without some consistent theory to guide those judgments. Nor is this a question
we can answer by assuming “costs” have some metaphysically correct definition. Rather, we must
ask \textit{why} we want to know what costs are in order to know how to define them.

To those in the camp that believes that below-cost pricing to deter entrants or drive out rivals
is irrational and thus not credible, the answer is that we don’t want to know because their favored
discipline would permit low prices regardless of costs.\textsuperscript{84} But any doctrine that condemns monopolists
who engage in below-cost pricing, which is what we actually have, must rest on the opposite

\textsuperscript{82} Anticipating this implication, Professors Ordover and Willig would actually extend their prohibition to
condemn as “predatory” any product innovations whose profitability depends on their ability to drive rivals out of the
market. \textit{See} Ordover \& Willig, \textit{supra} note , at 22-30. But this ignores the fact that innovations create long-term positive
externalities for society (by lowering cost curves or increasing product value) that matter much more than any short-term
loss of allocative efficiency, and spurs a dynamic response of innovation by other firms and entrants that can trump the
first innovation. \textit{See infra} at IV. Our intellectual property laws thus correctly adopt the different premise that it is
socially desirable to reward innovations with a right to exclude rivals from its fruits. Further, their test would sometimes
prohibit innovation because it sacrificed profits earned on the innovator’s older products even if those profits were
supracompetitive. \textit{See} Ordover \& Willig, \textit{supra} note , at 25-26. But such a sacrifice of supracompetitive profits is
desirable because it brings the quality-adjusted price of market products closer to its fruits. Further, their test would sometimes
prohibit innovation because it sacrificed profits earned on the innovator’s older products even if those profits were
supracompetitive. \textit{See} Ordover \& Willig, \textit{supra} note , at 25-26. But such a sacrifice of supracompetitive profits is
desirable because it brings the quality-adjusted price of market products closer to their cost. Ordover and Willig wrongly
think that such a profit sacrifice can only have an anticompetitive objective, \textit{id.} at 26 n.49, but this ignores the possibility
that incumbents fear rival competition in innovation over time, which would naturally tend to squeeze out the
supracompetitive profits on the preexisting good unless the Ordover-Willig test were adopted.

\textsuperscript{83} Indeed, Schumpeter would say that all innovative investments require such a sacrifice of short term profits
to reap monopoly gains, and thus necessarily require the possession or prospect of some degree of market power. \textit{See}
generally \textit{infra} note __.

\textsuperscript{84} \textit{See supra} Introduction at __.
premise that such below-cost pricing sometimes is a rational and credible strategy, otherwise the doctrine is not only unnecessary but harmful. See id. For purposes of such a doctrine, the key reason to care about the distinction between below-cost and above-cost prices must be that (if implemented) below-cost pricing will inflict losses on an equally efficient entrant or rival that can deter its entry or cause its exit. It is further clear that – no matter what theory one holds – pricing that does not inflict losses on entrants or rivals cannot deter or drive them out of markets because they will be better off entering or staying in the market no matter what they believe about whether the pricing will occur or persist.

I will accordingly define “costs” as whatever measure of costs would prevent an incumbent pricing at cost from inflicting losses on an equally efficient entrant or rival that could deter its entry or cause its exit. This definition, it will be shown in the rest of this Article, provides the necessary premise for the arguments that follow about why efforts to restrict above-cost price cuts are socially undesirable. In other words, the ultimate justification for this definition is functional: with this definition, one can derive strong functional reasons for distinguishing above-cost price cuts from below-cost price cuts; without it, those reasons would not follow. Judge Posner and Professor Baumol have previously proposed a similar benchmark, but did not justify it with a theory explaining why that benchmark would advance social welfare. The analysis in this Article provides that underlying theory. This is the correct benchmark because otherwise the social welfare grounds detailed below for rejecting restrictions on “above-cost” pricing would not apply. Accordingly, while the analysis below necessarily depends on this initial premise about how costs are defined, an important implication of the analysis below will be that this cost definition is correct precisely because it is a necessary premise for justifying the distinction between above-cost and below-cost pricing even when both are designed to drive out entrants.

This understanding of the underlying justification for the proper cost definition also has the helpful feature that it permits one to sort through, in a more precise and analytic manner, what is currently a murky and confused debate on how to measure costs. In particular, this Part shows how it can provide a theoretically coherent methodology for sorting through many seeming conundrums currently handled largely by ad hoc exceptions, including how to apply a cost-based predatory pricing test: (a) to industries with zero marginal costs, (b) when firms make different equally efficient choices between a labor-intensive structure and capital intensive structure with lower variable costs, (c) in declining industries where all firms have marginal costs that are below their variable costs, and (d) when an alleged predator strategically times low prices after it has made capital investments (and thus has low variable costs) but the rival is deciding whether to do the same. It will be useful to sort through these issues not only for their own sake, but because doing so will address in advance a mistaken premise sometimes invoked in models used by those advocating restrictions on above-cost price cuts: that any cost-based test would necessarily deter
entry by barring an entrant from recovering sunken entry costs.87

A. The Murky and Divided Nature of the Current Debate Over Cost Definitions

Scholars have taken a variety of positions about the proper cost measure. The leading proponents of a cost-based test, Professors Areeda, Hovenkamp and Turner, argue in their influential antitrust treatise that short run marginal cost is the correct measure but recommend using average variable cost as an imperfect but more measurable surrogate.88 Both marginal and variable cost measures exclude fixed or sunk costs that do not vary with short run changes in predator output.89 One clear limitation of this approach is that Areeda and Turner acknowledge their test might allow pricing below average total costs that destroys or deters an equally efficient entrant.90 But reflecting a somewhat inconsistent attitude toward this benchmark, Areeda, Turner, and Hovenkamp would switch to average total costs if they are exceeded by the predator’s marginal costs in part because prices above average total costs could not drive out equally efficient rivals.91 They also take the position that when marginal costs fall below average variable costs, one should go by average variable costs not just as a surrogate but on the merits because if prices are below average variable costs it would be more efficient for the firm to close operations.92 To deal with the problem that average variable cost can be below marginal cost, they would also require a defendant to show that marginal costs were not “substantially” or “significantly” above average variable costs.93 Thus, in the end they really embrace a three-staged cost test: (1) when below the output that minimizes average variable costs, use average variable costs; (2) when between the outputs that minimize average variable and total costs, use average variable costs unless marginal costs are significantly

87 See Edlin, supra note , at 955-60, 973-78; Williamson, supra note , at . Although Edlin does not extend this model to equally efficient entrants, others have done so with a similar assumption about entry costs, and thus concluded that (at least when the incumbent is a monopolist in multiple markets) pricing above variable costs can deter equally efficient entrants. See Easley, Masson & Reynolds, Preying for Time, 33 J. INDUS. ECON. 445, 447-54, 457 (1985).

88 See AREEDA & HOVENKAMP, supra note , at 238-40; AREEDA, ANTITRUST ANALYSIS 194-95 (3rd ed. 1981); AREEDA & TURNER, supra note , at 153-54. They justify their marginal cost measure as what normal firms look at when pricing in the short run and what determines prices on perfectly competitive markets, so that a price cut that remains above marginal cost produces an efficient allocation of resources in the short run. See AREEDA & HOVENKAMP, supra, at 325-26, 367; AREEDA & TURNER, supra, at 156-57; AREEDA, supra, at 194-95. Thus, their implicit benchmark appears to define costs so that prices set at cost could not exclude equally efficient short run production of the marginal output. This might sometimes deviate from the question whether the pricing could exclude the entire output of an equally efficient entrant in the short or long run.

89 AREEDA & HOVENKAMP, supra note , at 320-321.

90 See Areeda & Turner, supra note , 88 HARV. L. REV. at 711-12; AREEDA & TURNER, supra note , at 164-68 & n.7. They justify this result on the grounds that the alternative is (1) protecting some less efficient entry and (2) incurring short run (and perhaps long run) market inefficiency since there must be excess capacity for marginal cost to be below average cost. Edlin and Williamson have properly criticized them for failing to connect the goals of short run efficiency and minimizing inefficient entry with any larger social welfare calculus, especially since Areeda and Turner concede alternative tests would have the long term effect of increasing pre-entry output. See Edlin, supra note , at __; Williamson, Predatory Pricing II, at 1183, 1186-87; Areeda & Turner, supra note , 87 YALE L.J. at 1339, 1342. Further, the Areeda-Turner test, as stated, encourages the inefficient pre-entry creation of excess capacity that justifies the short run price below average cost. See infra at __.

91 See AREEDA & HOVENKAMP, supra note , at 367, 373; AREEDA & TURNER, supra note , at 153, 160-61, 170.

92 Id. at 175; AREEDA & HOVENKAMP, supra, at 381; AREEDA, supra note , at 195.

93 Id.; AREEDA & TURNER, supra, at 176; AREEDA & HOVENKAMP, supra, at 386.
They would provide as exception to their rule condemning prices below average variable costs: (a) when the industry has so much excess capacity that all firms are pricing below their average variable cost or (b) when a defendant builds a plant that turns out to be too costly compared to demand that prices do not cover a standard measure of average variable costs that includes use depreciation. See infra at __. They also provide an exception to their rule permitting prices above average variable costs when fixed costs were incurred just to drive out the rival. Id. at __. They also acknowledge exceptions would be warranted on theoretical grounds (a) when an industry is expanding, and variable or marginal costs are low compared to fixed costs, and (b) when the defendant retains inefficient excess capacity on hand in order to be able to respond to entry, but reject these theoretically sound exceptions on administrative grounds. Id. at __.

Although not a proponent of a cost-based predation test, Professor Baumol has argued that the right measure of costs to prevent predation that could drive out an equally efficient rival must be whatever sorts of costs the rival could avoid by exiting the market. He calls these “average avoidable costs,” and notes they exclude inescapable sunk costs “that cannot be avoided for some limited period of time” but include any unsunk fixed costs that “must be incurred in a lump in order for any output at all to be provided.” Unfortunately, there is some confusion because different authors use different meanings of fixed costs. While Baumol defines fixed costs to exclude sunk costs, Areeda, Turner, and Hovenkamp state “fixed costs are costs that would continue even if the firm produced no output at all,” which seems to correspond to Baumol’s notion of sunk costs. Others distinguish between sunk and avoidable fixed costs, but describe both as included within the category of fixed costs.

Other prominent antitrust scholars, including those who are ordinarily conservative about antitrust like Judge Posner, worry that a predator’s price could be above short run marginal, variable or avoidable costs, yet well below an equally efficient firm’s long term cost of staying in business. They thus advocate use of a cost measure that includes both fixed and sunk capital costs – called variously “long run marginal costs,” “long run incremental costs,” or “average total costs” – and would condemn prices below that cost measure either presumptively or (under other versions) when coupled with an intent to exclude rivals. However, they too invoke exceptions when this test

---

94 They would provide as exception to their rule condemning prices below average variable costs: (a) when the industry has so much excess capacity that all firms are pricing below their average variable cost or (b) when a defendant builds a plant that turns out to be too costly compared to demand that prices do not cover a standard measure of average variable costs that includes use depreciation. See infra at __. They also provide an exception to their rule permitting prices above average variable costs when fixed costs were incurred just to drive out the rival. Id. at __. They also acknowledge exceptions would be warranted on theoretical grounds (a) when an industry is expanding, and variable or marginal costs are low compared to fixed costs, and (b) when the defendant retains inefficient excess capacity on hand in order to be able to respond to entry, but reject these theoretically sound exceptions on administrative grounds. Id. at __.

95 See Baumol, Predation, supra note , at 57-59.

96 Id. at 57n.13, 58-59. Since Baumol’s definition of fixed costs excludes sunk costs, it differs from that of Areeda, Turner, and Hovenkamp, for whom “fixed costs are costs that would continue even if the firm produced no output at all.” Areeda & Turner, supra note , at 154; Areeda & Hovenkamp, supra note , at 320. Their notion of “fixed costs” thus seems to correspond to Baumol’s notion of “sunk costs.” And Baumol’s notion of fixed costs seems to correspond to what they might call the marginal or variable cost of producing the first unit of output. Others distinguish between sunk and avoidable fixed costs, but describe both as included within fixed costs. See, e.g., Carlton & Perloff, supra note , at 28-29.

97 Areeda & Turner, supra note , at 154; Areeda & Hovenkamp, supra note , at 320.

98 See, e.g., Carlton & Perloff, supra note , at 28-29.

99 Posner, supra note , at 189, 191-93 (price between short-run and long-run marginal cost predatory if coupled with intent to exclude rival); Posner, The Chicago School of Antitrust Analysis, 127 U. Pa. L. Rev. 925, 942-44 (1979). (same for price between average variable and total costs); Joskow & Klevorick, A Framework for Analyzing Predatory Pricing Policy, 89 Yale L.J. 213, 252-54 (1979) (price between average variable and total cost presumed predatory unless predator shows it maximizes short-run profits, which is likely only when industry has excess capacity); Brodley, Bolton & Riordan, Predatory Pricing: Strategic Theory and Legal Policy, 88 Geo. L.J. 2239, 2271-82 (2000) (price
seems likely to lead to bad results.\textsuperscript{100}

The cases in both the U.S. and Europe have responded to this confusion and disagreement mainly by holding that prices between average variable and total costs might be illegal, but differ on whom to allocate the presumption against, and on the grounds for rebuttal.\textsuperscript{101} The result is that if you are a monopolist or victim and prices are in between these cost measures, you do not really know where you stand.

In short, the current debate is something of a mess. But with our functional criteria in place, we can add some clarity. Much of the problem is there is little discussion about the actual source of disagreement. The current debate is framed as being about \textit{which costs} to include, when in fact the real debate is about what \textit{time period}, \textit{output}, and \textit{firm} to consider in deciding how to categorize a cost. All costs are variable or avoidable in the sufficiently long run.\textsuperscript{102} The fixed costs (like overhead) necessary to make any output this year need not be incurred next year. Generally even sunk costs are inescapable only for a time: the big expensive plant will eventually wear out and thus require a decision about whether or not to incur the cost of its replacement.\textsuperscript{103} Even land costs are not inescapable in the long run: although the land does not wear out, the plant on it does, so that continuing to use the land for present purposes incurs the opportunity cost of not selling the land for its market value. There is thus no cost that is inherently variable, avoidable, fixed, or sunk. It all depends on which time period one uses, whether that period looks backwards or forwards, and whose output and ability to vary or avoid costs during that period matters. But there has not been much explicit debate about these points, leaving the current analyses somewhat murky. We can be more explicit on all these points by considering more directly and systematically the extent to which they bear on the ability of an incumbent pricing at cost to impose losses that could deter or drive out an equally efficient entrant or rival.

\textbf{B. Use Whatever Costs Are Variable During the Period of Predatory Pricing}

Professors Areeda, Hovenkamp, and Baumol all state that the correct time period for judging whether costs are variable or avoidable is the time period of the alleged predatory pricing.\textsuperscript{104} But Areeda and Hovenkamp provide no justification for this standard, which they in fact abandon in favor of a blanket assumption of “middle-run” variability,\textsuperscript{105} and the choice requires much more

\textsuperscript{100}See infra at __ (describing the declining industry exception).


\textsuperscript{102}See AREEDA & HOVENKAMP, \textit{supra} note , at 321, 386-87; AREEDA & TURNER, \textit{supra} note , at 155-56; AREEDA, \textit{supra} note , at 199.

\textsuperscript{103}See Baumol, \textit{Predation}, \textit{supra} note , at 57 n.13.

\textsuperscript{104}See Baumol, \textit{Predation}, \textit{supra} note , at 61-62; AREEDA, \textit{supra} note , at 199-200; AREEDA & HOVENKAMP, \textit{supra} note , at 387.

\textsuperscript{105}Although acknowledging the period of predation is the correct time period “theoretically,” Areeda and Hovenkamp recommend adopting a “relatively arbitrary definition of middle-run variability” based on administrative concerns and a crude overall judgment that it is “reasonable” to deem “most costs” variable. AREEDA & HOVENKAMP,
justification and elaboration than Baumol gives.

The basic logic is simple enough. Until the alleged predatory price lasts long enough to be exceeded by those costs that were variable for that period, an equally efficient entrant cannot have suffered any loss it could have avoided by exit, and thus cannot have had any incentive to exit. Alleged predatory prices that last only one month cannot cause an equally efficient rival to lose any money by not exiting unless those prices are lower than the very short run costs the rival incurred by operating that month. In contrast, pricing that lasts for ten years will cause an equally efficient rival to lose money (relative to exit) if the price does not suffice to cover the fixed costs of producing anything next year (like overhead) or the future capital costs of rebuilding facilities that seemed like sunk costs in the short run but are variable over a time horizon of ten years. Thus, we need not pick one time period or cost measure in the abstract; the choice is dictated by the time period of the alleged predation.

One implication of this is that, for purposes of predatory pricing law, one should thus not distinguish between sunk, fixed, avoidable, and variable costs with general definitions about whether they are escapable in a limited period, or need to be incurred to produce any output or output over the first unit of output. Rather the question of whether (and what) costs to consider should depend solely on whether they could be varied during the time period of the alleged predation. It may be that the costs that could be varied during this period include the costs of making the first unit, and thus include what Baumol calls avoidable costs. But it may be that the costs of making the first unit of output cannot be varied during the relevant period, and thus should be excluded. Indeed, it may be that the costs of making the first 100 units cannot be altered, in which cases the costs that are variable during that period do not even include all costs that are traditionally lumped into average variable costs. At the other extreme, it may be that the period of alleged predation is so long that it includes what would be deemed sunk costs under a definition that considers whether they are inescapable over a limited period. I will thus call a cost “variable” if it could be altered during the period of alleged predatory pricing, and “fixed” if it could not be altered during that period.

What then is the concern of those who favor using long term costs even when the predatory pricing period is short? One theory is that predatory pricing at the “rival’s variable costs” can induce their exit because “[t]he rival, who also incurs fixed costs, exhausts its financial resources and leaves the market.” But this is wrong. As long as the price exceeds the costs rival could vary during the relevant time period, the rival would lose money from leaving the market. True, it might have to renegotiate loans or go into bankruptcy because it becomes unable to meet any loans that it incurred on the assumption it could cover its long run sunk or fixed costs. But since the rival is worth more as a going concern (which follows from the assumption that prices exceed its variable costs), even then the business will be maintained in bankruptcy and the firm will stay in the market.

supra, at 377, 387, 389; AREEDA & TURNER, supra note , at 173-74. But it is not clear why the administrative concerns should be so great given that the time period of alleged predatory prices is presumably known, nor why it should be reasonable to make an allocation that is clearly wrong for many time periods or firms. Further, any seeming administrative advantage from a using a categorical definition seems eliminated by their willingness to abandon average variable costs, or narrow or broaden their definition, when the categorical rule seems to lead to bad results. AREEDA & HOVENKAMP, supra, at 384-85, 391-93, 403-09.

106 Ordover, supra note , at 79-80 (emphasis in original; summarizing literature); see also Williamson, Predatory Pricing, supra note , at 322 (accepting deep pockets theory).
This point is sometimes lost because of the popular image that firms somehow “vanish” in bankruptcy, but in fact bankruptcy reorganizations just change the owners of the business from shareholders to creditors, and the bankruptcy trustee as fiduciary for the new owners has the obligation to continue operating the firm if that creates profits for the new owners. (Note the question would be different if below-cost pricing were inflicting actual losses, for then the firm would have to convince creditors to provide additional funding to keep the firm afloat.) Thus, predatory pricing at the costs that are variable to the rival may injure the rival’s shareholders or lenders, but cannot drive out an equally efficient rival. Accordingly no rational predator would do it, especially since the predator would be inflicting the same injury on its own shareholders or lenders. There is also the question why the predator would have any better access to capital markets than the rival, but that is a general question for below-cost predatory pricing. Here, the problem is that pricing above the costs that are variable to the rival cannot inflict any loss that drives out the rival at all even if the predator does have better access to capital markets.

A related theory appears to be that an equally efficient rival would exit the market after even a short period of prices below long run costs because the rival sees before it a future where prices will not allow it to stay in business. Thus, some think that when the predator prices at the rival’s variable costs, “a rational rival should leave at the first indication that the incumbent is even contemplating a predatory campaign, there being no point in sticking it out and squandering resources when exit is inevitable.” But this too is wrong. Even if the rival were convinced the predator’s pricing will be permanent, it would have no incentive to exit prematurely. Until the rival begins to have to make decisions on whether to keep incurring fixed or capital costs, those costs will not be variable to it, and the rival will stay in the market because it is making a profit at the alleged predatory price relative to the costs it could vary during the period of such pricing.

Thus, with uniform variable costs for the equally efficient predator and rival, one need not worry about the effect of a disjunction between price and long run costs on an existing rival because that rival will not exit the market as long as the price allows it to cover the costs that are actually variable during the period of alleged predation. To test the proposition, let’s directly confront the example that has most bedeviled modern antitrust scholars: what do we do with software whose marginal or variable cost of production is near zero? The usual answer is that the “new economy” has to be treated differently because marginal or variable costs are so low. But this creation of

---

107 Id. at 80.
108 Id. at 79. (Check Telser and Benoit papers supposedly making this point)
109 There are reasons to doubt the predator’s ability to credibly commit to continue a scheme of pricing that imposes long term losses on itself or even forgoes short-term profits, but those reasons are equally applicable to below-cost pricing. Id. (describing objections that below cost-pricing is irrational because the predator cannot recoup the losses).
110 See, e.g., Brodley, Bolton & Riordan, supra note , at 2272-73. They base this on the assumption that “the short-run incremental cost of a program downloaded from the Internet is nil.” Id. at 2272. This is probably overstated since advertising and market effort affects the level of sales through downloads, and additional downloads require more billing effort and technical support. But in any event the incremental costs seem very low relative to the fixed or sunk costs of making the software, and this is the basis for their conclusion. Likewise, Areeda and Hovenkamp are sympathetic to cases that make an exception to average variable cost rules in regulated or high technology markets with (a) “an unusually high ratio of fixed to variable costs” and (b) where the industry is “expanding.” AREEDA & HOVENKAMP, supra note , at 406-09 & n.44 (agreeing long run incremental costs is there relevant but then deciding test
an ad hoc exception is hardly satisfactory. In the old economy, marginal or variable costs are also often below average or long term costs. Indeed, the distinction between these cost measures only matters because sometimes they diverge. If this divergence presents a big problem when it is large, it must present at least a small problem when the divergence is small. Our theory for how to deal with that divergence should be able to address the full range of possible magnitudes rather than having ad hoc exceptions, especially since those exceptions create ambiguity about just what the vague dividing line might be. The better answer is instead that it all depends on how long the pricing lasts. If pricing at a near zero price occurs for a short time, it cannot persuade any equally efficient software rivals to exit since they will also have near zero marginal costs and thus retain a profit from operating during that period. If instead such pricing lasts for years, then it could be predatory because it would not allow an equally efficient software rival to recoup the software development costs of updating that software to stay in the market. The latter costs become variable to the rival if the predatory pricing is lengthy but not if it is brief. Paradox solved.

The fact that marginal or variable costs are uniformly low in an industry thus raises no difficulty if one is careful to consider all (and only) costs that are variable during the period of alleged predation. However, different problems might be raised if the equally efficient rival has a different ratio of fixed to variable costs than the alleged predator, or if the alleged predatory price is timed after the predator has incurred a fixed or sunk cost that the rival must decide whether to incur in the future. I address those issues next.

C. Use Variable Costs of Replacing the Victim’s Output, Not of Producing the Predator’s Output

A common concern is that equally efficient firms might have varying ratios of fixed and variable costs. For example, Williamson observes that more capital intensive firms can have lower marginal or variable costs even when they are less efficient than more labor intensive firms. He thus advocates instead using average total costs as a better means of sorting out the efficiencies of firms. Analysis of this problem depends on where the firm is on its cost curves. For a typical set of cost curves, see Figure 1.

could not be implemented). Factor (a) is irrelevant for reasons noted in text. Factor (b) is relevant to the extent it means the relevant capital costs are in fact variable during the period of the alleged predatory pricing. Compare infra at ___ (noting that when an industry is contracting, capital costs may not recur). Thus rather than creating a special exception, it is more straightforward to see this as one application of the general principle.

111 See Williamson, Predatory Pricing, supra note __, at 321-22. In fact, a capital-intensive firm may not always have lower variable costs: it depends in part on how much its capital assets depreciate with increased use. Areeda & Hovenkamp, supra note __, at 323-25. But the problem can arise sometimes.
One possibility is that the capital intensive firm’s marginal cost is below its average total cost. This means expanding its output would lower its average cost, and that the firm must be below its optimal capacity, indicated by its minimum average total cost. The capital intensive firm thus should expand output until it reaches its optimal capacity, and pricing that allows it to do so should not be penalized. At its optimal capacity, its marginal cost will equal both its marginal and average total cost, so we would have no disjunction among those cost measures raising a concern. And if the labor-intensive firm cannot compete at a price that equals the capital-intensive firm’s costs at optimal capacity, then the labor intensive firm is not in fact more efficient. It would instead be more efficient to have the output of any labor-intensive firm that prices above the capital-intensive firm’s minimum average total cost replaced by any output increase the capital intensive firm needs to make to get up to its optimal capacity. The capital-intensive firm that prices at marginal cost will be able to undercut the labor-intensive firm but only because the labor intensive firm is not in fact more efficient but has higher costs of providing the incremental output.

The other possibility is that the firm’s short run marginal cost exceeds its average total cost because the firm is operating above its optimal capacity. If so, then the capital intensive firm that prices at marginal cost will be above its minimum average total cost, and if it prices above that cost cannot exclude any equally efficient rival, which can offer a lower price by keeping its output at the

---

112 I consider below the argument that a predator might have incentives to build inefficiently large capacity. See infra at __.
level that minimizes average total costs.\textsuperscript{113} Pricing at or above average total costs thus should be a conclusive defense since it cannot drive out an equally efficient firm.\textsuperscript{114} So should pricing at or above marginal cost.

However, one might reasonably be concerned about using an \textit{average} variable cost measure, because a firm’s average variable costs are by definition lower than its average total costs.\textsuperscript{115} Thus, even a firm exceeding its optimal capacity could, if allowed to price at its average variable cost, price at a level that is lower than its marginal or average total cost, and thus lower than the costs of an equally efficient firm at providing that incremental output. A variable cost test can accordingly offer inadequate protection to an equally efficient rival \textit{if} based on an average of the costs that are variable for the predator’s entire output, as is often done with an average variable cost test.

But this does not mean that one must abandon use of a variable cost test. It simply means one must be more precise in defining the relevant \textit{output} whose costs can be varied. Since our purpose is to determine what cost measure would prevent a firm from driving out an equally efficient rival, the relevant costs that are variable are \textit{not} the costs of producing the predator’s entire output (as the average variable cost test might suggest) but the costs of the predator replacing the rival’s output.\textsuperscript{116} This is because the concern is rival exit and thus the question is which firm is more efficient at producing the rival’s output.

That is, the relevant concern is that the predatory price allows the predator to expand output so that the additional output replaces the rival’s equally efficient output and thus drives it out of the market. The relevant cost measure is thus whatever, over the period of alleged predatory pricing, is the cost of producing that higher output minus what the cost would have been of producing the lower output. The higher output will be the alleged predator’s output at the predatory price, and the lower output will be that output minus the rival output that was allegedly displaced by predation. (Where the rival was already in the market the lower output will equal the predator’s output before the alleged predatory pricing began.) This measure of variable costs in effect is the sum of the marginal costs for each unit of output from the lower output to the higher output divided by that difference in output, but can be measured more simply by comparing the costs at the higher output to the costs at the lower output and dividing by the output difference, rather than trying to calculate the marginal costs of producing the last item at each output level. Assuming marginal costs are increasing, this variable cost figure will be lower than the marginal cost of producing the \textit{last} item the alleged predator makes, but will still protect an equally efficient rival.\textsuperscript{117}

\textsuperscript{113} \textsc{Areeda & Turner}, \textit{supra} note, at 164; \textsc{Areeda & Hovenkamp}, \textit{supra} note, at 373. Professor Scherer assumes otherwise on the premise that the rival will be left with only the residual demand left over after the predator sells its output. \textit{See} Scherer, \textit{supra} note, at __. But this seems incorrect. If the predator is above its minimum average total cost, and must keep prices at that level, an equally efficient rival can undercut that price by selling at its minimum average total costs, and sell all the output it can produce at that optimal scale.

\textsuperscript{114} \textsc{Areeda & Turner}, \textit{supra} note, at 153, 159-64, 170; \textsc{Areeda & Hovenkamp}, \textit{supra} note, at 367, 373.

\textsuperscript{115} Average total cost always exceeds average variable cost by definition since it is the sum of average fixed and variable costs. \textsc{Areeda & Turner}, \textit{supra} note, at 155; \textsc{Areeda & Hovenkamp}, \textit{supra} note, at 320-21.

\textsuperscript{116} \textit{See} Baumol, \textit{Predation}, \textit{supra} note, at 64-65.

\textsuperscript{117} Any price below the predator’s marginal cost of producing the last unit out output would still be inefficient for at least some of its increased output. But given that the predator is expanding beyond its optimal capacity, a price above its variable cost of increasing its capacity must be above its minimum average total costs, and thus cannot displace production by an equally efficient rival and amounts to the monopolist inefficiently conferring a boon of extra output.
Accordingly, if the capital-intensive firm had to go above its optimal capacity to replace its rival output, we should look only to the higher variable costs when it does so, not to the lower variable costs it incurred in getting to optimal capacity. Since prices at or above those higher variable costs are also above minimum average total costs, they cannot drive out an equally efficient rival, which can price at that average total cost level. If, even above optimal capacity, the capital-intensive firm’s variable costs of producing its rival’s output are lower than the rival’s own variable costs of producing that output, then the rival is in fact not equally efficient at making its output. Rather, the entire rival output can more efficiently be supplied by an increase in the capital-intensive firm’s output, even though it is exceeding its optimal capacity.

This approach also addresses a conundrum otherwise created by the approach of Areeda, Turner, and Hovenkamp. Although their cost measure means a predator should shut down when its price is lower than its average variable cost, they recognize that this creates an anomaly when there is so much excess capacity that this legal rule would require every firm in an industry to shut down, and thus they create another exception to their own rule. But under the equally efficient entrant benchmark, the question is not whether the predator is profiting by producing its output, it is whether it could profitably replace the rival’s output. A firm pricing at marginal costs that are below its average variable costs necessarily lowers its average variable costs by expanding output. Thus, it

at below-cost prices to buyers. Since the rival cannot be driven out by such pricing, the monopolist will not recoup any profits and thus such inefficient pricing should be self-deterring.

The analysis grows a bit more complicated if the putative predator is below its optimal capacity. Suppose that, at whatever time is alleged to be before the predatory behavior began, the predator is below its optimal capacity by the quantity of output \( Q \) that could replace the victim's output. It then increases output to its optimal level, but instead of charging its marginal cost, it charges a price equal to its variable cost of that increased output, which is somewhere between its marginal cost at the original output and below the marginal cost at its final (optimal) output. Some of this increased production is inefficient (wherever the marginal cost exceeds this price), and one might thus be worried that this is a predatory increase in output that could replace the output of an equally efficient firm whose average variable cost of production is greater than this price but lower than the predator’s total cost or the marginal costs of its last unit of production. But the rest of the predator’s increased production is efficient (and cheaper than the rival’s) and the overall increase in predator output cannot displace the rival’s production of the same output unless the rival has higher variable costs of producing it, in which case the rival is in fact not equally efficient at producing that increment of output. Thus, the solution to this apparent anomaly is that the proper predation claim is not that the entire increase in output was predatory, but rather that the predatory portion of the output increase was where the output’s marginal cost began to exceed the price. For that properly defined increment of output, the variable cost of providing it will be above price.

To take a concrete example, suppose the predator’s MC = Q, and it begins at an output of 90 and marginal cost of $90 and increases this output by ten to reach its optimal capacity of 100, at which its marginal cost is $100. But instead of charging $100, the predator charges $95/unit, which fully covers the variable cost of this output increase of 10. To test the proposition that it will not matter if a higher proportion of the labor-intensive rival's costs are variable, take the case where all the rival’s costs are variable and equal $96/unit reflecting constant labor costs. One might be concerned that by pricing at $95 and increasing output by 10, the predator would be able to drive this rival out of business even though at $96/unit, its costs are lower than the capital-intensive firm's minimum average total cost and marginal costs. But if the rival has constant variable costs of $96/unit, then the predator by pricing at marginal cost would not have produced 90 units at $90, it would have produced 96 units at $96/unit. Thus, the rival would only have had four units of output to replace, and the variable cost of replacing those last four units would be $98. Since those are the relevant variable costs, the predator could not price below $98 for those four units, and thus could not drive out the rival under a properly defined cost test if it properly alleged that the predatory increase in output was the last four units. The first six units were replaced by more efficient production and thus should not be part of the predation claim.

118 See AREEDA & HOVENKAMP, supra note , at 384-85.
may well be that its prices are below its current average variable costs but would not be below the additional variable cost it would incur by adding output equal to what the rival used to produce. In such a case, the declining demand that created the excess capacity simply means that the minimum efficient scale can sustain fewer firms than before.

D. If Short Term Pricing Can Deter Long Term Investments, Then Use Magnitude of Predator Costs for the Sorts of Costs Variable to the Victim, But Look to the Future to Measure Cost Magnitudes

Another concern, so far neglected in the literature, is that the predator might time its alleged predatory pricing to begin after the predator has incurred a sunk cost but right before its rival has to decide whether to do the same. Suppose, for example, the predator has just renewed a ten year lease on its factory but knows that its equally efficient rival has an upcoming decision about whether to renew its own factory lease. The predator then cuts prices to a level that do not suffice to cover the sum of operating and lease costs. The price exceeds the predator’s variable costs since its lease costs are sunk. But the price would not exceed the variable costs of an equally efficient rival because, since the rival can avoid committing to the lease, the lease payments are variable to it at this time. If that market price persists, the rival will lose money by renewing the lease and thus has incentives to exit the market rather than renew. The same holds if a firm lowers software prices to near-zero after it has come out with the latest software update but before its rival has invested in the software development to follow suit.

Now there are good reasons not to treat this concern as serious because short term pricing probably cannot deter long term investments. But let me defer those reasons until the next Section. Here the point I wish to focus on is that -- even if this concern is serious -- it does not justify a general rule of always employing long term costs or average total costs, which would be overinclusive. Rather, the solution is to be careful in defining just which variable costs one examines.

Because we want to make sure our cost measure is not protecting less efficient firms, we generally say our examination is into the predator’s variable costs. But it would be more precise to say that our benchmark requires that the magnitude of any variable costs must come from the predator’s cost data. Which sorts of costs we deem variable would, if this concern is serious, instead turn on whether those sorts of costs were variable to the rival during the period of alleged predation. The reason is that the purpose of our test is not to determine whether the price is profitable in the short run to the alleged predator, but rather to determine whether it could drive out an equally efficient rival.

The following illustrates the proper approach if this concern is serious. Suppose that each of two firms has one plant that costs $10,000 a year to lease and makes 1000 gizmos annually. Take two factual scenarios. (1) Each firm also has operating costs of $10 per gizmo and is thus equally efficient. The alleged predator then leases two plants and begins charging $15 a gizmo. If the rival...
See Easley, Masson & Reynolds, supra note, 33 J. INDUS. ECON. at 447-54, 457 (offering model under which an incumbent could deter entry with prices above average variable costs).
Defenders have tended to stress that if short run marginal costs are below average total costs, then by definition expanding output should lower average cost, which must mean the alleged predator is below its optimal (least average cost) output and has excess capacity. They thus conclude it will be cheaper to use that excess capacity than to build new more expensive capacity. Objectors have tended to stress that marginal or variable cost measures of predatory pricing give monopolists inefficient incentives to build the excess capacity that is necessary to justify future pricing below average total costs that makes entry unprofitable. Applying the approach outlined above can provide a more systematic resolution to the problems raised by the four possible sources of excess capacity.

(1) We might have a declining industry. Here we would not want to require prices that cover capital costs because that would encourage investment and entry at a time when market economics dictates exit. Advocates of total cost measures like Posner and Williamson have tended to respond by creating a declining industry exception to their favored cost measure. But a more satisfactory answer is again to be more precise about when and what we costs are measuring, rather than to use overinclusive cost measures or make equally overinclusive exceptions. To the extent plant replacement costs will not recur in the future because firms are contracting or exiting, then the future magnitude of those predator costs will be zero. The incumbent’s future capital costs will thus be

---

121 See AREEDA & TURNER, supra note, at 164-168 & n.7; AREEDA & HOVENKAMP, supra note, at 238-39, 369, 400-01; AREEDA, supra note, at 195-96. Actually there is technically one exception: it might be the case that the marginal cost of the final item produced is below average total cost but that the cost of adding one more unit of output would exceed average total cost. For example, in the lease hypotheticals noted above, the strict plant output limit of 1000 meant that going from 2000 to 2001 units has a marginal cost of $1010. Thus the $10 marginal or variable cost of making 2000 units is below the average total cost of $20 even though the predator is not below optimal plant size and does not have excess capacity. But if output limits are less strict, marginal costs will rise less sharply and this exception will not arise.

122 See Spence, Entry, Capacity and Oligopolistic Pricing, 8 BELL. J. ECON. 534 (1977); Posner, supra note, 127 U. PA. L. REV. at 942; Scherer, supra note, at 171 n.12.

123 See POSNER, supra note, at 189-90; Williamson, Predatory Pricing, supra note, at 322-23. They are not the only ones who create an ad hoc exception in this circumstance. Areeda and Hovenkamp also create an exception to their rule banning prices below average variable costs when this results from industry-wide excess capacity. See supra at __ (explaining how that issue can instead be addressed by defining the output whose costs are in question). They also create a similar exception when a defendant builds a plant that turns out to be so costly compared to demand excess capacity. See supra at __ (explaining how that issue can instead be addressed by defining the output whose costs are in question). They also create an exception when a defendant builds a plant that turns out to be so costly compared to demand excess capacity. See supra at __ (explaining how that issue can instead be addressed by defining the output whose costs are in question). They also create an exception when a defendant builds a plant that turns out to be so costly compared to demand excess capacity. See supra at __ (explaining how that issue can instead be addressed by defining the output whose costs are in question). They also create an exception when a defendant builds a plant that turns out to be so costly compared to demand excess capacity. See supra at __ (explaining how that issue can instead be addressed by defining the output whose costs are in question).

124 One might think they can never be zero because the predator will have to replace its plant at some point to stay in the market. But there are two possibilities. (1) The predator has multiple plants. Then, what matters is the long run cost of operating the marginal (least efficient) plant. In the face of declining market demand that produces prices
far below the past capital costs reflected in backward-looking measures of average total costs.\textsuperscript{125} Instead, combining the magnitude of future predator costs with the sorts of costs that are variable for the potential entrant during the period of predatory pricing will produce the right result without having to patch up a hole in the cost measure theory with an ad hoc exception.\textsuperscript{126}

(2) We might have a temporary cyclical decline in demand that creates temporary excess capacity. But since one cannot know whether the decline is temporary until it ends, during the duration of any demand dip the magnitude of the alleged predator’s plant replacement costs should be zero as above. Pricing at that level will defer entry, which is the right result since during that time the entrant will be less efficient than a firm that need not incur capital costs. But entry will not permanently be deterred if the decline is indeed temporary.\textsuperscript{127} Nor will the predator be able to drive out any equally efficient existing firm that also has excess capacity with any price that exceeds their (equal) variable costs during that temporary period.\textsuperscript{128}

(3) We might have economies of scale that make it cheaper for the largest firm to provide additional output. But once again we do not have to create an ad hoc exception. Even if plant replacement costs are the sorts of costs that should be considered variable, their magnitude is determined by the incumbent’s costs. Given economies of scale, the incumbent monopolist would incur smaller such costs in future production of the output the entrant proposes to add than the entrant would. Pricing at those future incumbent costs will deter entry but the entrant is not equally efficient given the relevant economies of scale.\textsuperscript{129}

(4) The incumbent monopolist might be retaining inefficient excess capacity on hand in order to be able to respond to entry. Defenders of cost-based approaches acknowledge the difficulty, and either advocate an exception or reject one as inadministrable and accept this as a downside of their rule.\textsuperscript{130} But a more satisfactory approach would recognize that in such a case the magnitude of future incumbent capital costs will include the replacement costs of maintaining that inefficient excess capacity even if the market is in steady state. And that sort of cost must be included because that is the sort of cost that is variable to the entrant. A monopolist required to price at the requisite cost level thus will not be able to keep out an equally efficient entrant even if the entrant believes

\textsuperscript{125} It is surprising Posner did not see this point since he himself pointed out the past-future divergence between average total costs and future marginal costs. See Posner, supra note , at 190.

\textsuperscript{126} Alternatively one could say that what matters is “anticipated” average total costs, and that neither they nor “long run marginal costs” nor “long run incremental costs” should include capital costs that will not recur.

\textsuperscript{127} Suppose we instead assume that it is crystal clear the demand decline is temporary but that entry cannot be deferred. That is unlikely but if so any entrant would know to discount the temporary decline in demand and enter now, recovering entry costs when demand returns if entry is efficient.

\textsuperscript{128} Areeda and Turner suppose that it might, but do so based on the argument about exhausting rival financial resources that was rebutted above. Compare supra at __, with Areeda & Turner, supra note , at 165-66.

\textsuperscript{129} For more extensive analysis on when the entrant will be equally efficient giving declining costs see infra at IV.C.3.

\textsuperscript{130} Areeda, supra note , at 198-99 (rejecting exception); Josow & Klevorick, supra note , at 253-54 (recognizing one); Areeda & Hovenkamp, supra note , at 402-03 (suggesting both).
the pricing will persist indefinitely, and will thus have no incentive to create excess capacity to make such an attempt.

E. If (as Likely) Short Term Pricing Cannot Deter Long Term Investments, Then Use Sorts of Costs Variable to Predator During the Period of Predatory Pricing

The preceding section assumed the concern that short-term predatory pricing might deter a long-term investment was serious, a proposition that is doubtful for reasons I now take up. The main problem is the following. The claim that pricing (or threats to price) above the alleged predator’s variable costs might deter investment or entry by equally efficient firms depends on a crucial supposition. That supposition is that, in making its long-term investment or entry decision, the rival will believe that such pricing will persist in the long run, or that any threat to impose such pricing after entry will both be carried out and persist in the long run. This supposition is what allows an alleged predator with a short term pricing strategy (or mere threat to begin such pricing) to influence rival investment or entry decisions that are made based on long term expectations. But this supposition is dubious because any equally efficient rival will realize that, if it incurs the sunk cost in question, it will no longer be rational for the alleged predator to persist in pricing that covers variable costs but not sunken capital costs, let alone to carry out a threat to begin such pricing. The reason is that, once the sunk cost is incurred, such pricing cannot give the equally efficient rival any incentive to leave the market. Since the alleged predator could make more money with pricing that covers these long run costs, and cannot drive out the rival with lower pricing, it would be irrational for the predator to persist in such low pricing. The prospect of such irrational pricing thus would not induce exit by the equally efficient rival, which will instead assume the unremunerative pricing will not continue.

This might seem indistinguishable from the claim that an equally efficient rival cannot be deterred or driven out by pricing below the predator’s variable costs because it would be irrational for the predator to persist in such money-losing pricing. But actually the issue here is different. There, the pricing below variable costs inflicts actual losses on the equally efficient rival that induce the rival to exit if it believes the predator will persist, which itself might make it rational for the predator to persist to drive the rival out. Here, once the sunk cost is incurred, pricing above variable costs cannot inflict any future loss on the rival and thus cannot give it any incentive to leave the market. A single-market monopolist will thus literally have no reason to persist in such a pricing strategy. It will instead raise prices to at least cover long run costs, which are by hypothesis the same for the incumbent and the equally efficient entrant.

Indeed, the incumbent monopolist who cannot price below variable costs will have strong incentives to price even higher than long run costs in response to an equally efficient entrant. Because the entrant has committed the sunk costs, the monopolist cannot drive the entrant out with any low price that is above their equally efficient variable costs. The addition of the entrant has thus converted the former monopoly to an unavoidable duopoly. Thus, as soon as it realizes the entrant

131 See supra Introduction.
132 The perhaps counterintuitive implication is that, where incumbent and entrant are equally efficient, pricing just barely above variable costs but below long run costs is actually a less rational incumbent strategy that pricing below variable costs. Compare Edlin, supra note , at 961-63 (assuming that above-cost predatory pricing must be more rational than below cost pricing).
is equally efficient, the incumbent monopolist will endeavor to accommodate entry by pricing at supracompetitive duopoly levels rather than dropping prices to less profitable above-cost levels in a fruitless attempt to drive out the entrant.

This has the interesting implication that, if not permitted to price below its variable costs, the incumbent monopolists themselves will want to sort out the equally efficient entrants from the less efficient ones as accurately as possible, and will only attempt to drive out the latter with price cuts. If the incumbent monopolist does react to entry with a price cut that is below its long run costs but above the cost of replacing the victim’s output that are variable to it during the period of alleged predatory pricing, then it must believe the entrant is not equally efficient. Further, if that short run price cut fails to drive out the entrant, then the incumbent monopolist will in the long run realize that its belief about the entrant’s relative inefficiency was mistaken, and endeavor to raise prices back to a supracompetitive duopoly level. Given this long run prospect, short term price cuts to levels that are above the incumbent’s variable costs should not deter investment or entry by equally efficient firms.\footnote{Where the entrant is more efficient than the incumbent, it may instead prefer to persist in prices that are above its variable costs but below the incumbent’s variable costs in order to drive the incumbent out of the market and become the new monopolist itself. But that prospect will hardly deter entry.}

True, one could try to extend some of the counter-theories used to justify bans on below-cost predatory pricing to this case where predator prices do not cover its long term costs. One theory is that the predator’s bluff to persist in such pricing may never be called because the short-term predatory pricing deters investment or entry by misleading the rival (or its bankers) into thinking the predator’s efficiency is greater (or market demand lower) than it actually is.\footnote{Ordover, supra note , at 80-81 (synthesizing recent literature); Brodley, Bolton & Riordan, supra note , at 2247-49, 2285-2330 (same at greater depth).} But this would not apply to a mere threat to lower prices in response to investment or entry: actual lower prices would be necessary to create the misleading impression. This theory thus has little application to the topic of reactive price-cuts to new entry.\footnote{On the other hand, if the entry is announced but not yet completed because some important capital investment remains to be made, see infra at V.A (on difficulties of defining moment of entry), then price cutting at that stage might deter the investment necessary to complete entry if it misleads the entrant. But it is hard to believe entrants will be that misled by pricing that is plainly reactive to their entry plans.} Nor would past reactive above-cost price cuts have much future reputational effect in the same market. Unlike a price cut below variable costs, a price cut above those costs cannot drive out an equally efficient entrant who has incurred the sunk costs of entry, and thus will eventually be abandoned and fail to create the impression that the incumbent is more efficient than entrants. Further, in the present context, the assumption that other firms and capital markets can be fooled in the long run seems dubious. Such pricing creates a market opportunity for any capital investors savvy enough to realize when current prices are an unreliable indication of future prices, especially since the actual future prospects are that the equally efficient entrant will get a share of supracompetitive profits.\footnote{Any assumption about uncertainty must also be applied evenhandedly. The predator will also be uncertain about entrant efficiency and future consumer demand. If the rival is less efficient, pricing below total costs would sacrifice profits for no good reason since total cost pricing would deter investment or entry anyway. If the rival is more efficient, then pricing at incumbent variable costs may not deter investment or entry even if the entrant mistakes that price for an indication of the incumbent’s total costs. If the rival is equally efficient, the predator will still be uncertain about the entrant’s plan.} More important, even if actual short-term
pricing that did not cover long term costs does fool rivals (and their bankers), their investment or entry will only be deferred. To continue deterring it, the predator will have to maintain such pricing for the long term. If it does so, then such pricing below long term total costs will become predatory because the relevant capital costs will have become variable for the predator too during the long period of alleged predatory pricing. Thus, even if one believes capital markets are easily misled, that is no reason to deviate from using the costs that are variable to the predator during the relevant period.

Alternatively, one might conclude it is rational for the predator to persist in pricing that does not cover long term costs in one market if it is a monopolist in many markets and wants to signal firms in other markets that they will lose money if they enter (or incur the periodic sunk costs necessary to stay in) those other markets. For example, suppose that after an equally efficient firm enters one market, the incumbent responds with a price that allows the entrant to recover the costs that are now variable to it, but that does not allow recoupment of its sunk costs of entry. Such a price cannot drive out the entrant for reasons described above and would thus be irrational if only the first market were considered. But suppose the incumbent does not set its price to drive out the first entrant: instead it sets that price to deter other equally efficient firms -- who have not yet incurred entry costs -- from entering the other markets. If the other potential entrants believe the incumbent will respond with the same pricing in those other markets, they will (even though equally efficient) be deterred from entering because they cannot recoup their entry costs. A similar strategy might be employed to deter the sunken investments necessary for existing rivals to stay in multiple markets.

Or so goes the theory. But there are manifold problems with this multi-market theory of predation through prices above variable costs. The first is obvious: often the alleged predator is not a monopolist in multiple markets, making this theory utterly inapplicable. Second, it will rarely be the case that in all the predator’s markets, the predator has made sunk investments that rivals or potential entrants are just about to decide on. Such a strategy thus cannot help induce exit or deter entry in any markets where the rivals have already incurred the relevant sunk cost. Third, this pricing strategy cannot deter investment or entry by any rival that simply invests or enters in all the remaining markets simultaneously, since then the pricing cannot send a signal to any remaining market. Capital markets should be willing to provide the financing to increase the scale of entry since getting (or retaining) a slice of supracompetitive profits in these markets will be highly profitable. And if no single rival can invest or enter in all markets, they can always organize a group

\[\text{137 See Ordover, supra note }, 80 \text{ (reviewing literature); Easley, Masson & Reynolds, supra note } 33 \text{ J. INDUS. ECON. at 447-54, 457 (offering multi-market model under which an incumbent could deter entry of equally efficient entrants in subsequent markets with prices above average variable costs in the first market).}
\]

\[\text{138 Easterbrook, supra note }, 286-87.\]
Fourth, even if rivals cannot act in multiple markets, such a pricing strategy cannot deter investment or entry by a rival in the last of the markets where rivals have not yet incurred the relevant sunk costs. The reason is that carrying out and persisting in such pricing will be irrational since it can neither drive out the last entrant nor send a signal to any further market. Since the threat is not credible, investment and entry by that last rival will not be deterred. Further, the rival in the next to last market would likewise not be deterred because the rival would realize such predator pricing would be irrational since it could not deter investment or entry in the only remaining market. And so on, until by backward induction one reaches the conclusion that the threat of initiating or continuing such pricing could not deter investment or entry in any of the prior markets.  

In the case of below-cost predatory pricing, some have argued that backward induction fails because rival information is imperfect about whether incumbents can profit from below-cost predation against an equally efficient entrant. But here that uncertainty is inapplicable since pricing above variable costs can never profitably drive out an equally efficient entrant. Others argue there is no clear end point at which a rival will know it is in the last market. But applying this assumption evenhandedly implies equal ambiguity about who is in the first market that begins this supposed signal-sending game. If a predator is in 10 ongoing markets, and deprives a rival in one market of the ability to recoup total costs, rivals in other markets seem more likely to draw inferences from the nine markets than the one outlier. The predator may thus need to carry out such a scheme in most markets to send a message to those that remain, which makes the scheme less rational (since profits will be sacrificed in a majority of markets where driving out the equally efficient rivals is impossible) and makes it clear to the remaining rivals that they are the last ones (which strengthens backwards-induction problems). 

More important, for the signal sent from any single market to be convincing, the predator will have to persist in the low price long enough to actually deprive its rival of a profitable long term return on its investment or entry. If the predator just offers a price at variable costs for a short time, then it will not send the necessary signal that the predator is willing to persist in pricing below its total costs long enough to deprive an equally efficient rival of any ability to recoup sunk costs even when the rival cannot be driven out of the market. But the need to persist in such a scheme over the long haul to create an object lesson for other markets creates two serious problems. The first is that, by the time the incumbent has persisted long enough to create the signal in the first market, rivals will likely have made sunk capital investments in the other markets (which presumably share the

---

139 Id. at 288. Since the firms would by definition be in the separate markets and unable to enter them all, they would not be horizontal competitors subjecting their agreement to judicial hostility. In any event, since an agreement to make simultaneous investments or entry need not involve any agreement or price or agreement not to also make investments or entry in each other’s territories, it does not seem to involve any per se violation. And under the rule of reason, an agreement to add output without more would be procompetitive.

140 Selten reaches the same conclusion for a threat of unprofitable below-cost predatory pricing. Selten, The Chain Store Paradox, 9 THEORY & DECISION 127 (1978). If that conclusion holds there, a fortiori it will be true when variable cost pricing in the last market cannot inflict any loss that will induce the rival in the last market to exit after it incurs the sunk costs of investment or entry.

141 See Ordover, supra note __, at 80 (reviewing literature). Even in these models, there will be an equilibrium where a below-cost pricing strategy is only sometimes credible enough to deter investment or entry.

142 See id. (reviewing literature).
same rate of capital replacement). Second, and more important, the predator’s own capital costs will become variable during such a lengthy period of the predatory pricing, and thus such pricing would be illegal under a variable costs test. Thus, any multi-market predation plan by a monopolist must begin with conduct that would be an antitrust violation under variable cost measures in at least the first market, and probably in most markets, in order to send the necessary signal. The imposition of treble damages in those markets should suffice to deter such a scheme.

If this analysis in this section is correct, then it greatly simplifies the cost inquiry. Courts need not determine marginal costs or make complex judgment calls about which costs should be considered variable and which fixed and when to use one cost measure or the other. Nor need courts determine the magnitude of the predator’s costs for the sorts of costs that are variable to the victim during the period of alleged predatory pricing, which may entail capital costs and thus require projections about the what sorts of capital costs the incumbent will incur in the future and what their magnitude would be. Instead, the relevant incremental costs are simply the difference between the actual total costs the incumbent incurred during period of alleged predation and the total costs it would have occurred without the alleged predatory increase in output. Unless there has been some exogenous increase in input costs, this can often be determined by simply comparing total costs before and after the alleged predatory behavior. Dividing this by the alleged predatory increase in output converts this into a per unit incremental cost, which can then simply be compared to the per unit price the predator charged during the alleged period of predation.

F. Conclusion on Proper Cost Measure

In short, it seems implausible that a predator could deter long term investments or entry by any equally efficient firm with short-term threats or pricing strategies that exceed short term costs. And when the predator pursues a long term pricing strategy, the difference between variable and total costs disappears because all costs are variable over the long term. My own conclusion is thus that allowing alleged predators to price at their own variable costs will not deter or drive out equally efficient entrants as long as we are careful to consider all costs of the allegedly predatory increase in output that replaces the rival’s output that are variable to the predator during the period of alleged predation. Accordingly, prices above this properly defined variable cost level should not be deemed predatory.

If the logic behind that conclusion were rejected, it would still clearly be the case that a predator could not deter or drive out an equally efficient rival if its prices covered a cost measure reflecting the magnitude of predator costs for the sorts of costs in replacing the rival’s output that are variable to the rival during the period of entry or investment decisions influenced by the short term existence or threat of such pricing. Thus, even on this somewhat less sanguine view, prices above this somewhat higher cost level should never be deemed predatory even if below long run total costs. A fortiori, prices above long run total costs should not be predatory on any view, since everyone acknowledges they cannot exclude equally efficient entrants.

I should emphasize that the conclusions in the remainder of this Article hold regardless of whether I am correct about which cost measure suffices to assure that prices at cost cannot deter or drive out an equally efficient rival. Even if readers disagree with my above analysis about what

---

143 See supra at II.D.
measure of costs satisfies this standard, the analysis below would support rejecting a restriction on any price that is not below whatever cost measure the reader believes does satisfy this standard. That is, for purposes of establishing my general thesis, one can substitute for the word “costs” whichever measure of costs the reader believes suffices to prevent an incumbent pricing at cost from deterring or driving out equally efficient entrants. While the lowest possible cost measure that satisfies this test may remain a matter of debate, there is consensus in the literature that a price at or above long run incremental cost cannot drive out an equally efficient rival. Since the proposals to restrict above-cost price cuts would all ban some prices above long run incremental costs, they can be described as banning above-cost predatory pricing no matter which cost measure one uses.

III. REACTIVE PRICE CUTS TO DRIVE OUT ENTRANTS NEED NOT INDICATE INCUMBENT MARKET POWER – AND THE IMPLICATIONS FOR DEFINING COSTS AND MARKETS WHERE COMMON COSTS EXIST

The premise behind the general theory for restricting reactive above-cost price cuts that drive out entrants is that such price cuts undesirably protect market power. After all, pricing above cost seems to meet a standard definition of market power. Relatedly, standard analysis assumes that an ability to price discriminate implies the firm must have market power. These premises have been particularly important in the airline industry, which is the central case cited by supporters of restrictions on reactive above-cost price cuts. Regulators and enforcement agencies have assumed that each route is its own market and that airlines who run hub-and-spoke systems must be exploiting market power if they charge higher prices in routes that connect spokes to concentrated hubs than they do on other routes with similar distance and destiny. Given these premises, if a hub airline responds to an entrant who sells on route connecting a hub-and-spoke by lowering its price on that route and driving out that entrant, this must reflect an undesirable protection of incumbent airline market power.

These premises have reinforced intellectual frustrations about the seeming failure to realize the predictions of contestable market theory in the airline industry. Contestable market theory held that in markets where entry was very easy, it would not matter whether an incumbent firm had 100% market share. The threat of entry would make the incumbent lower prices to competitive levels.

---

144 The European Advocate General expressly agreed with the general standard that predatory pricing law should favor “more efficient firms” and protect only firms that were “equally or more efficient” than the dominant firm. Compagnie Maritime Belge Transports v. Commission, Opinion of Advocate General, ¶ 117, 132, C-395/96O & C-396/96P, 1998 ECJ CELEX Lexis 10417 (Oct. 29, 1998). But he was of the mistaken view that selective above-cost price cuts could somehow drive out an equally efficient firm because of “its lesser financial capacity.” Id. ¶¶ 122, 132, 138. In fact, this is impossible if one defines costs correctly and certainly if one defines them to include all long run marginal costs. Perhaps the Advocate General had in mind the intuition, shared by many theories, that a firm might be equally efficient in the long run, but not in the short run, and thus need financing to overcome its initial inefficiency. I address that possibility below. See infra at IV.C.


146 63 Fed. Reg. at 17920; U.S. Summary Judgment Memo, supra note , at 41; U.S. Appellate Brief, supra note , at 5-6, 64.
Individual airline routes were considered the classic example of a contestable market because it was so easy to move or lease planes to enter a route if an incumbent monopolist charged prices that were too high. Thus, the expected result of airline deregulation was that each route would be priced at competitive rates (no higher than the cost of the most efficient potential entrant) no matter how much any individual carrier dominated sales on that route. When instead hub prices turned out to be persistently higher, one intellectual hangover was the suspicion that contestable market theory was not working because airlines were engaged in some anticompetitive conduct to exclude entrants. Reactive price-cuts seemed one promising target. Restricting them, and encouraging inefficient entry, had the hope of forcing airlines to at least engage in a type of limit pricing that amounted to restoring the market to a contestable state. Edlin’s piece is clearly in this spirit, explicitly hoping that banning reactive price cuts will make the market more “contestable.”

But the problem is that these underlying premises were never true. In a hub-and-spoke airline system, as Section A shows, each route has interlinked demand and common costs, and thus cannot be assumed to be in separate markets on which incumbents enjoy market power. Nor does the existence of price discrimination, inside or outside of the airline industry, prove market power in the sense of a power to restrict total industry output in order to increase revenue or profits. To the contrary, as Section B explains, in highly competitive markets where firms face common costs in delivering goods to buyers with different demand elasticities, price discrimination among those buyers is frequent and predictable. Such price discrimination will charge more to the high-demand buyers, thus effectively recouping a higher share of common costs from them. Indeed, while competition will drive total economic profits to zero, and thus make total revenue equal total costs, competition will also force each firm to adopt the price discrimination schedule that maximizes its revenue if one is feasible. An equilibrium should result whereby firms settle on the price discrimination schedule that, by maximizing revenue from any common costs, also maximizes each firm’s ability to incur common costs, and thus maximizes industry output and aggregate sales to the high and low demand buyers.

But it will be a churning equilibrium because firms or entrants will constantly be tempted to try to serve only (or mainly) the high-paying buyers at a lower price. If they do so, Section C

---

148 See Eldin, supra note, at 990.
149 Professor Levine provided the seminal analysis showing that price discrimination can and does occur frequently in competitive markets as a method of recovering common costs. See Levine, Price Discrimination Without Market Power, 19 Yale J. Reg. 1 (2002) [hereinafter Levine, Price Discrimination]. Professor Baumol has since extended this analysis to show that competition or contestable markets will normally force firms to adopt discriminatory pricing. See William J. Baumol, Normal and Effectively Competitive Equilibrium with Ubiquitous Discriminatory Price Taking (draft on file with author) [hereinafter Baumol, Ubiquitous Discriminatory Price Taking]. Both also collect numerous prior sources observing that price discrimination often occurs in competitive markets, some offering more limited theories as to why it occurs. See Levine, supra, at 6-7; Baumol, supra, at 1. While Levine and Baumol show that price discrimination can and will occur in competitive markets, neither makes – or necessarily agrees with – the point made here that reactive above-cost price cuts are a competitive practice that is necessary and desirable to restore the output-maximizing schedule of competitive price discrimination.
150 Baumol, Ubiquitous Discriminatory Price Taking, supra note, at 1-6.
151 Id. at 4 n.4, 17-20.
points out, other firms will have to deviate from the output-maximizing price discrimination schedule by cutting their prices to these high-paying customers to a price that remains above the separate cost of serving them but that covers a smaller proportion of common costs. Since this deviation is inefficient, lower industry output will result as long as it lasts. If the entrant’s costs of serving only the high-paying customers are higher than the separate costs of serving those customers that would be incurred by the other firms who also serve lower-paying customers, then separate provision is in fact not as efficient as common provision. The other firms will thus be able to drive the entrant out with a price that is above their separate costs, and after they have done so, raise prices to the high-paying buyers and restore the output-maximizing price discrimination schedule. That is, reactive above-cost price cuts that drive out entrants not only do not necessarily signal the undesirable protection of market power, they may be the normal and necessary way of restoring efficient price discrimination on competitive markets.

A. Individual Routes in Hub-and-Spoke Systems Cannot Be Assumed to be Separate Markets

The premise that airline markets were properly defined by a route between City A and City B failed to recognize that the advent of hub and spoke systems of airline travel meant that routes could no longer be separated from a general network of airline routes. With a hub-and-spoke system, airlines can satisfy customers who desire travel between a multitude of city-pairs with dramatically fewer flights and less cost by having one “hub” city with flights to each of the other “spoke” cities. Moreover, the flights will be fuller (and thus cheaper per passenger) in the hub and spoke system, and more likely to sustain a reasonable schedule of travel on the larger jet planes that passengers prefer because of their more comfortable ride. Indeed, it is clear that without hub-and-spoke systems it would not be possible to sustain a reasonable schedule of air travel from small cities that may have hundreds of people traveling somewhere each day (who could thus fill a flight to a hub) but only a handful of people traveling to any single city (who could thus not cover the cost of a schedule of nonstop flights from their small city to all their separate destinations).

The efficiencies driving this hub-and-spoke system are thus overwhelming. But these efficiencies mean one cannot simply assume routes between different cities are separate markets. Passengers with different itineraries are being combined on the same flights. The market prices for seats on a flight from hub city A to spoke city B thus turn not just on the demand for travel between those cities, but also on the demand for travel between B and cities C-Z. And travel between city B and cities C-Z might be serviced by rivals not only through the same hub, but with nonstop flights or through other hub cities. Some passengers might be interested only in nonstop flights between a hub and spoke city, but in a sense they are side-beneficiaries of a system driven mainly by the need to provide hub-and-spoke coverage. Indeed, the hub-and-spoke system makes possible nonstop service between cities that otherwise would not be possible. With the routes intermingled in this way, it may thus make much more sense to think about the entire hub-and-spoke network as the

---

152 See Levine, Airline Competition, supra note , at 441-46.
153 Id. at 441-42.
154 Id. at 442-43.
155 Id. at 443.
relevant product an airline provides. If the hub-and-spoke network itself is the relevant product, then the relevant price and cost would clearly be those earned and expended across the hub-and-spoke network, not on individual routes.

Even if individual routes are separate markets for some purposes, their integration into a hub-and-spoke system requires incurring large common costs, whose allocation across the constituent routes is largely arbitrary. Developing such a hub and spoke system requires large investments. The airline cannot just have flights between the most attractive city-pairs to reap the advantages of hub and spoke travel but must rather have a full network of flights. It must have sufficient gate slots and ticketing offices, a fleet of planes and equivalent maintenance facilities, baggage transfer operations, a large team of trained personnel, and a complex system for marketing, planning, scheduling, reserving, dispatching, and pricing across the entire hub-and-spoke network. Perhaps more important, it must incur the costs of maintaining flights that impact revenue on connecting flights, and incurring increased ground time for planes in order to provide connections, which also generally entails using more gates. As Professor Levine put it, “for a network airline, the cost of providing each passenger with a trip is shared with passengers with different itineraries. Airline networks combine passengers originating at and/or destined for multiple cities on the same flight in order to share the indivisible burdens of providing desirably frequent service in markets which don’t attract enough passengers to support nonstop service at competitive costs.” Moreover, in order to maintain the reliability of its hub-and-spoke system over time, the airline probably has to commit to covering certain routes even though they become unprofitable over the short run.

Consideration of hub-and-spoke economics thus sharply undercuts the intuition that reactive price cuts that drive out entrants on particular airline routes undesirably protect market power on that route. In a hub-and-spoke system, individual routes may not represent separate markets because of interlinked demand and common costs. If so, then airlines should be not considered to have market power unless they earn supracompetitive profits on the entire hub-and-spoke system. But in fact airlines do not earn above normal profits, suggesting they do not have such market power.

---

156 See generally 1992 Horizontal Merger Guidelines, 57 Fed. Reg. 41552, §§1.0-1.22 (examining buyer and supplier substitution to define antitrust markets).
157 See Baumol, Predation, supra note , at 59 (any allocation of common costs is arbitrary). Airlines sometimes allocate these common costs by simply dividing the total hub-and-spoke costs by number of flights or flight hours. 140 F. Supp. at 1175-77. But while this may make sense for accounting or business purposes, it is clear that as an economic matter any allocation of joint production costs is inherently arbitrary. For example, over 50% of passengers in major hubs are “connecting passengers” (they are flying through the hub between two spokes), see Edlin, supra note , at 944 n.12, which leaves something less than 50% as “hub passengers” (the hub is one-end point of their travel). Thus one could take the view that because the connecting passengers would support the relevant flight, the incremental cost of flying the hub passengers is extremely low. See id. Alternatively, one could take the view that because the hub passengers would support the flight, the incremental cost of flying the connecting passengers is extremely low. The problem is that both could be true, making any allocation of joint costs to the individual flights arbitrary.
158 An airline that does not offer connecting flights like Southwest Airlines has very little turn around time because it needs just enough time to unload one set of passengers and load the next. It need not keep the plane waiting for connecting customers. This shorter ground time also means it can run more flights per gate. This reduces the capital costs of planes and gates.
160 See See Dorman & Baumol, On Cures That Bring Their Own Diseases, draft available from author, at 4; Baumol, Ubiquitous Discriminatory Price Taking, supra note, at 8.
if the price on a single route falls below the separate cost of flying that route, continuing that price can be efficient if it increases demand on other routes in the hub-and-spoke system. In that case, under a cost-based test, the prices a hub-and-spoke airline charges should not be considered predatory unless the overall revenue on a hub-and-spoke system falls below the cost of providing the entire hub-and-spoke system.

If demand for the separate routes can be separated, the existence of widespread common costs still means that prices should not be considered predatory under a cost-based test unless either prices across the system are lower than total system costs or the price on the particular route falls below a measure of separate costs that excludes all common costs of operating the hub-and-spoke system. This is why the district court was correct to reject predation tests that compared individual route prices to fully-allocated system costs in the American Airlines litigation. An analogy might be drawn to the pricing used to recoup the common costs of flying a plane. As everyone who travels knows, some seats are sold for much more than others on the same flight, which may well mean that the lowest prices charged are well below the average cost per seat. But given the dominance of common costs, this should not make prices on those seats predatory. Instead, one must either compare the incremental revenue for the flight to the incremental cost of making that flight, or compare the price on the lowest priced seats to the incremental cost of serving the additional passenger, which may well be extremely low since costs are almost the same whether the seat is empty or full.

This is not a proposition unique to airlines, but rather is just one instance of the more general proposition that products with common costs should be considered below-cost only if the price for any one product is lower than its separate cost (which is unlikely since that excludes common costs) or if the prices for the combination of products falls below their combined cost (which includes common costs). Likewise, if one product with common costs is sold at different prices to different sets of customers, the prices should be deemed below cost if the price to any one set of customers is below the separate cost of producing that quantity or if the prices recovered from the combination of customers is lower than the combined costs of producing the aggregate quantity. Indeed, if a multi-product firm cuts prices on one product (or to one set of customers), but its prices for the combination of products (or customers) still covers all costs (including common costs), the initial prices for the combination of products (or customers) must have exceeded their combined cost and been supracompetitive. Thus, the price cut on one product (or to one set of customers) without a corresponding increase on other products (or customers) amounts to a desirable discount from oligopoly or monopoly prices.

But this does not mean either that the existence of price discrimination across routes shows

---

161 See supra at I.A.
162 See International Travel Arrangers v. Northwest Airlines, 991 F.2d 1389, 1396 (9th Cir. 1993).
163 See AREEDA & HOVENKAMP, supra note , at 382. In addition, one would have to show that the predatory output increase reflected in these seats sufficed to drive out the relevant rival output. See supra at III.C.
164 See Baumol, Predation, supra note , at 59-61.
165 Id. at 63-65. Cf. AREEDA & HOVENKAMP, supra note , at 244, 414-15, 418-22 (reaching similar conclusions, though sometimes for unclear reasons requiring proof of both rather than either).
166 Cf. X AREEDA, ELHAUGE & HOVENKAMP, ANTITRUST LAW ¶1758f (1996) (establishing similar proposition for package discounts offered in tying cases).
airlines must have market power, or that all reactive above-cost price cuts undesirably protects airline market power, for reasons considered next.

**B. Why Competitive Markets Induce Price Discrimination that Maximizes Output**

It turns out to be efficient to recoup the common costs of a hub-and-spoke system not with uniform prices, but with a complex regime of prices that vary sharply not just from route to route, but from customer to customer and day to day. Since passengers flying nonstop between a hub and spoke city get a more valuable slice of the hub-and-spoke system (quicker, more convenient travel), they are charged more per mile. Indeed, passengers on any single flight are charged wildly different prices to recover the common costs of operating that flight. Such price discrimination is not a feature unique to the airline industry. It also occurs with movie theaters that (without any market power) cover the common costs of exhibiting movies by price discriminating between adults, seniors and children, or with slaughter houses that (without any market power) cover the common costs of each cow by charging different per pound prices for different cuts of beef. Price discrimination among buyers who can be served only by incurring common costs is thus routine even on highly competitive markets, including not only airlines, movies, and beef, but hotels, computers, automobiles, restaurants, telecommunications, and the vast range of other products that offer coupons, rebates, student or senior discounts, quantity discounts, or different prices in different retail stores. Indeed, it is hard to think of industries without price discrimination, even though most of these industries are highly competitive or contestable, and the firms in them earn zero economic profit (i.e., a normal rate of return).

The prices charged to buyers thus varies greatly on competitive markets where, as typical, common costs exist. These prices will at a minimum cover the separate costs of serving each customer: that is the additional cost imposed by a single customer assuming common costs have been incurred. But if that were the only price charged to all customers, then firms could not recover their common costs and thus would never incur them. Accordingly, the price schedule for serving the combination of buyers will have to cover the common costs of doing so. Where price discrimination is possible, competition will force firms to adopt the price discrimination schedule that maximizes the revenue from customers for any common costs that have been incurred. But competition will also assure that the total revenue earned from both sets of buyers will not exceed

---

167 This is true even though the very feature that makes their air travel more valuable also might make it seem that their travel is less costly: they take a more efficient route, require fewer takeoffs and landings, need no arrangements to make sure connections are made, and do not require multiple sets of baggage handling. But which passengers enjoy these advantages of directness is itself a product of how the hub-and-spoke system is structured. Moreover, as noted above, the allocation of joint costs is inherently arbitrary.

168 Sometimes, as with the movie seats, the products sold are identical but firms differentiate among buyers who have different demand elasticities; sometimes, as with the beef case, the products are different in ways that naturally differentiate among buyers; other times, product differences are created that may even degrade some output in order to help differentiate among buyers, as with airline flight restrictions, cars, computer equipment, and other products and services. See Levine, *Price Discrimination*, supra note , at 20-21, 23-27; Baumol, *Ubiquitous Discriminatory Price Taking*, supra note, at 15-16.


total separate and common costs, and thus economic profits will remain at zero even though some buyers are paying a price above the separate cost of serving them.\textsuperscript{171} That is, a price discrimination schedule that earns positive economic profits will be undercut by a rival or entrant on a competitive or contestable market. But a price discrimination schedule that maximizes the revenue from any common costs without exceeding them cannot be undercut by profitable schedule of price discrimination that serves both sets of customers.\textsuperscript{172}

This competitive price discrimination will generally increase output. If all buyers were charged the \textit{same} price, and thus effectively covered both their separate cost and an equal share of common costs, then sales would be lost to those buyers who are not willing to pay that high a price but would be willing to pay a price higher than their separate costs. This would mean an inefficient reduction in output since their willingness to pay exceeds the marginal cost of doing so if common costs can be covered. If instead the buyers who value the product more highly can be charged a higher price, and thus cover a higher share of common costs, then the buyers who value the product less highly can be charged a price that is below their proportionate share of common costs but above their separate costs. Additional sales can be made and output will be expanded. In other words, the price discrimination schedule that maximizes the revenue from any common costs that are incurred will also enable firms to incur the most common costs and maximize industry output.

A concrete example may help. Suppose the common costs of flying each additional plane with 100 seats are $10,000 and the separate costs incurred for each additional passenger are $100. A full plane thus costs $20,000 to fly, or $200 a passenger. A half-full plane costs $15,000 to fly or $300/passenger. Suppose there are a total of 600 possible passengers, 300 business travelers who will pay up to $300/flight and 300 tourists who will pay only up to $100 per flight. Suppose further that there are two firms that exhibit competitive behavior and that, if their prices are equal, passengers divide up equally between the two firms. If they each try to charge all passengers the same price of $200 so that each covers an equal share of common costs, then the 300 tourists will not fly. The 300 business travelers will want to fly, giving each firm 150 passengers. They will thus fly one flight of 100 business travelers each, or at total of only two flights. The other 50 business passengers would also be willing to pay $200 but neither airline can afford to fly a half-full plane at that price. An airline might thus be tempted to charge $300/flight. But that price offers supracompetitive profits that can be undercut by the other airline charging $299 and so on until they are back to pricing at cost. Either (a) the two airlines will only fly one flight each at $200, leaving 100 business passengers with unmet demand because they cannot be paired with tourists at the uniform price, or (b) the two airlines will fly two flights with 75 passengers each at $266.67, thus wastefully leaving 25 seats empty on each flight, or (c) an entrant will come in (taking one third of demand at the same price) and add a third full flight at $200, or one of the firms gain 2/3 market share and be able to do the same. In all the cases, the 300 tourists will have unmet demand. In contrast, if the firms each can price discriminate by charging the business travelers $300 and the tourists $100, then each firm will get 150 of each and fly three full flights with total revenue

\textsuperscript{171} Id.

\textsuperscript{172} As noted in Section C, there might be efforts to undercut a schedule of price discrimination by serving only (or mainly) the high-demand buyers, but this will provoke above-cost reactive price cuts for those customers to drive out such an entrant and restore the efficient competitive equilibrium of price discrimination.

-43-
matching costs. The total industry output will rise from 200-300 passengers on 2-4 flights without price discrimination to 600 passengers on six flights with price discrimination.

All this may seem inconsistent with ordinary notions that competitive equilibrium force pricing at marginal cost. Indeed, theorists arguing that competitive markets feature price discrimination have in part claimed that such price discrimination is necessary to recoup nonmarginal sunk capital costs. But this claim seems dubious. If costs are truly sunk, they should and will be ignored by firms in pricing. This does not, as is often supposed, raise the paradox that sunk capital costs will never be incurred. If marginal costs increase with output and firms are below average costs, then it is true that pricing at marginal costs will prevent firms from incurring further sunk capital costs. But they shouldn’t; rather it is more efficient for firms to increase output with current capacity. If increasing output eventually drives marginal costs above average costs, then pricing at marginal cost will allow recovery of sunk capital costs, and will thus not prevent firms from incurring those sunk costs to expand capacity. If instead marginal costs decline across industry output, then we have a situation of natural monopoly. The firm that first incurs those sunk capital costs will become a monopolist, and monopoly returns will provide ample incentive to incur those sunk costs. Subsequent firms will not incur sunk capital costs, but they shouldn’t since when the market is a natural monopoly it would be wasteful for them to do so. To be sure, any government rate regulation to limit those returns must be constructed to allow recovery of sunk costs. And the most efficient way of doing so is to impose Ramsey pricing, which is a price discrimination schedule that prevents monopoly profits but charges high demand buyers more than low demand buyers so that the higher demand buyers cover a greater share of the sunk costs but the lowest demand buyers pay a price equal to the low marginal cost of the final units of production. But such government imposition of a discriminatory price schedule is in no sense necessary for the recovery of truly sunk costs.

---


Rather, the argument that competition may require discriminatory pricing seems appropriately limited to whatever costs are truly variable over the relevant pricing period, though this may well include capital or fixed costs that are recurring over time or as output rises. However, the existence of common variable costs means the marginal cost curve takes a different shape than the conventional assumption that it continually slopes upwards. Where there are common costs to serving a set of customers, the costs of incremental increases in output are lumpy and discontinuous, featuring a large cost when the common cost is incurred (of adding a flight or showing a movie) followed by much lower separate costs (of seating another customer), then perhaps another large incremental common cost (if another flight or movie is added) followed by lower separate costs, and so on. Thus, rather than the traditional graph, such a situation may best be reflected in something like Figure 2. If a firm tried to uniformly price at the level where the demand curve intersected its marginal cost curve (A), then it would lose money because it could not recover the variable common costs reflected in the first three cost spikes. It thus would not incur those common costs at that price. Note also that no single consumer has marginal demand that comes close to the full marginal cost of taking on any incremental common cost. Rather those common costs must always be allocated among some set of buyers whose marginal demand is lower but who in combination have enough demand to justify incurring the common costs. With uniform pricing, one could try to just allocate those common costs among the high demand buyers reflected in the leftward portion of the demand curve. But that would fail to include some buyers whose marginal demand does exceed marginal costs once common costs are incurred, and thus result in lower output. With discriminatory pricing, firms instead allocate some of the high and low demand buyers to each increment of common cost, thus covering that increment of common cost mainly with the high demand buyers but also selling to the low demand consumers at marginal costs.

176 These incremental common costs are for graphical purposes assumed to be constant, but if at typical industry costs generally increase with output, then it is more likely that as output increases each common cost spike will be somewhat larger than the spike that preceded it. Other recurring common costs, like the decision each day to continue incurring general management overhead, may only involve a single initial cost spike that does not repeat or rise with increased output, but the price schedule on that day will have to cover that cost to warrant continuing to incur it. That is, such costs recur over time though not with increased output at any given time.
cost, and efficiently expanding output to point A. Accordingly, such competitive price discrimination does not mean a deviation from the normal rule that firms will price at marginal cost – it rather reflects the mechanism by which, given common costs, firms are able to achieve marginal prices that equal marginal cost.

Another way to think of it is that, where common costs are not sunk but are recurring, then firms basically face a sequence of declining marginal cost curves, either over time as they decide whether to keep incurring common costs at all or at any given time as they decide whether to expand output in a way that requires incurring further incremental common costs. A competitive or contestable market will effectively impose a constraint on them that denies them supracompetitive profits from those common costs but effectively requires discriminatory Ramsey pricing to cover those declining costs.177

In short, price discrimination does not prove market power. Thus, no market power is proven by the airline practice of charging higher prices in routes that connect spokes to concentrated hubs than another routes.178 Indeed, empirical evidence shows that price dispersion increases with greater airline competition.179 Instead, it may not make sense to conclude an airline has market power unless it dominates and earns monopoly profits on the whole set of cities connected by a hub-and-spoke system, which is in fact is not the case. Further, competitive price discrimination will generally be efficient and output-maximizing where feasible. None of this means competitive discriminatory pricing will always be feasible because in a competitive market individual firms would have a constant temptation to try to undercut the price to high demand customers and grab a disproportionate share of them. But the existence of widespread price discrimination in competitive markets suggests that such price discrimination often is feasible. And the explanation probably lies in the fact that, in competitive markets, firms that just try to serve the high demand consumers are driven out by reactive above-cost price cuts, as discussed next.

C. Why Competitive Price Discrimination Will Often Require Reactive Above-Cost Price Cuts

Suppose that a rival or entrant deviates from the output-maximizing price discrimination schedule by offering high demand buyers (such as adult moviegoers or hub customers) a lower price. It could then hope to reap a disproportionate share of those customers and earn supracompetitive profits because these lower prices could exceed the sum of separate costs and a proportionate share of common costs. Professor Levine, in his seminal analysis of price discrimination without market power, assumed to the contrary that all firms, including airlines, that try to deviate from the optimal price schedule by offering lower prices to the high demand buyers will “tend to disappear” because they will make less revenue.180 And in his extension of Levine’s analysis, Professor Baumol at points tends to make the same sort of assumption that deviating from optimal price discrimination

---

178 See Baumol, *Ubiquitous Discriminatory Price Taking*, supra note, at 21 (noting that this new analysis of price discrimination has forced him to recant his prior conclusion that such differences in route prices did indicate market power).
must sacrifice revenue. But while the optimal price discrimination schedule is revenue- and output-maximizing for the industry as a whole given the overall proportion of high and low demand buyers that exist, it does not follow that it is so for individual firms. If the incumbents stick to the optimal schedule, a deviating entrant can hope to profit by lowering prices to the high demand buyers and having them make up a disproportionate share of its own customers. This is true even when the entrant has to incur the same common costs because the optimal price schedule will reflect a price to the high demand buyers that covers not only their separate costs but also a disproportionately high share of common costs. This by definition can be undercut by a lower price that remains above the sum of their separate costs and an equal share of common costs. Thus, if that lower price to the high demand customers shifts enough of them to the deviating firm that all its customers are now of the high demand variety, then at the new price its revenue will exceed its total costs and it will enjoy an increase in net revenue.

This does not mean that optimal price discrimination schedules can never be maintained in competitive markets. Rather, it means that the reason they are maintained is not that deviations from them are, standing alone, unprofitable. The reason is instead that, in a competitive market, incumbent firms would have to respond to any deviation by lowering their own prices to the high demand buyers in order to retain a proportionate share of their patronage, for revenue from these high demand buyers is necessary to cover common costs. Because these lower prices to high buyers mean they will now cover a smaller share of the common costs, the incumbents will effectively face higher costs when deciding whether to incur the incremental common costs that are necessary to continue serving the low demand buyers. Thus, in a competitive market, such deviations means the incumbents will also have to raise prices to the low demand buyers to continue to cover all common costs.

For example, the operator of a hub-and-spoke system has to combine the revenue produced by both hub and spoke passengers in order to cover the common costs of running a full system of frequent and connecting flights. The operator cannot afford to fly with half the passengers any more than the theater can afford to stop selling to adults. Nor can the operator ordinarily afford to drop

---

181 See Baumol, Ubiquitous Discriminatory Price Taking, supra note, at 4-6. Elsewhere Professor Baumol recognizes that the prices that exceed marginal costs will invite entry. See id. 18-20. But he does not link this observation to the point that a deviating entrant or rival can hope to get a disproportionate share of the high demand buyers, so that deviation will be most attractive when getting such a disproportionate share is most feasible and when reactive above-cost price cuts would not deprive a deviating firm of its disproportionate share.

182 The situation is different in the case of a deviating slaughterhouse that charges less for filet mignon, on which Professor Levine focused much of his analysis, see Levine, Price Discrimination, supra note , at 14-16, 18, because it cannot hope that such a price reduction to its high demand buyers will increase the proportion of meat it produces that is filet mignon. Rather, it will still produce the same proportion of other cuts of meat but be unable to increase the price for those remaining cuts above prevailing market prices. Since it has lowered its price for filet mignon, but cannot increase its price for other cuts of meat, its total revenue will decline. And since the optimal price discrimination schedule produced revenue that barely covered common costs the common costs of slaughtering whole cows, this lower revenue will necessarily fail to cover the common costs, and such firms should indeed disappear.

183 This price increase does not mean that incumbents are exercising some market power over the low demand buyers that they previously failed to exercise. Rather, it results because the costs of serving low demand buyers have effectively increased. At the new price schedule, firms will not only incur common costs less often, reducing total output, but a smaller share of that output will be available for low demand buyers. This reduction in output will, without any market power, raise prices to the low demand buyers in order to balance supply and demand.
flights between the hub and spoke A if the price on that route drops since that would eliminate not just transportation between those cities but also transportation between all the other spokes and spoke A. Thus, if an entrant lowers movie prices to adults or nonstop air prices on a single route, incumbent movie theaters or airlines will have to do the same. But firms also cannot afford to exhibit movies or maintain a hub-and-spoke system without covering the requisite common costs. So in a competitive market a price decline for the high demand buyer segment will result in a price increase to other buyers.

This change in the market’s price discrimination schedule means that the deviating rival or entrant will not in the end enjoy a disproportionate share of high demand buyers. If that rival or entrant also serves the lower demand buyers and is equally efficient, it will also have to raise prices to those buyers in order to cover common costs itself, and will thus go along with the general increase in market prices to the low demand buyers. The deviating rival or entrant will thus end up (like the rest of the market) at a new price discrimination schedule. But this new lower price discrimination will mean lower industry output and thus be inefficient and less profitable for everyone. Efforts to undercut the output-maximizing price discrimination schedule will thus reap the deviating rival or entrant no additional profit unless other firms are slow to respond, and will lower its profits once they do respond. If deviation is thus unprofitable, firms or entrants will have little incentive to engage in it and thus the output-maximizing price discrimination schedule can remain the competitive equilibrium.

In short, the competitive practice that is necessary to maintain an output-maximizing price discrimination schedule is precisely that incumbents will adopt rapid reactive above-cost price cuts to discipline or drive out rivals that just try to serve high paying customers. Rapidity is key, or less rivals or entrants can enjoy short-term profits that will destabilize this price discrimination schedule. This may explain why many retailers adopt announced policies of matching any lower price that its rivals may offer. Some have thought these policies are anticompetitive because they facilitate price discrimination or oligopolistic coordination. But retail markets seem far too competitive to sustain any price discrimination or coordination that tries to reap supracompetitive profits. A more likely explanation is that running a retail store involves incurring common costs every day to serve a range of high to low demand consumers, and the most efficient and output-maximizing method of covering those common costs is the widespread retail price discrimination we routinely observe, whereby consumers of high end products pay a much higher markup than other consumers. But such price discrimination is subject to destabilization by retailers who try to undercut prices to the high end customers unless reactive price cuts by incumbents are extremely rapid. Committing in advance to a price matching policy is a way of assuring such rapidity without incurring the difficult task of monitoring numerous other retailers. In other industries where there are fewer rivals or entrants to monitor, incumbents might not need such a price matching policy but can instead rely on a general practice of adopting reactive above-cost price cuts when the deviating rival or entrant undercuts the prices to high demand customers.

184 See Aaron S. Edlin, Do Guaranteed-Low-Price Policies Guarantee High Prices, and Can Antitrust Rise to the Challenge?, 111 HARV. L. REV. 528, 529-31, 536-52 (1997) (arguing that such policies facilitate anticompetitive price discrimination); id. at 530 n.4, 531 n.9, 533 n.14 (collecting sources arguing that such policies can facilitate oligopolistic coordination).
Nonetheless, two features make operating hub-and-spoke flight systems different from retailing consumer products, exhibiting movies or slaughtering cows. First, a retailer, theater or slaughter house need only maintain a proportionate share of sales to high demand buyers. In contrast, demand and supply conditions may well mean that maintaining a hub-and-spoke system requires an airline to retain a disproportionate share of sales to customers who fly nonstop to their hub because their system focuses around a particular hub that rivals do not share. With this disproportionate hub share, incumbent hub-and-spoke airlines can more plausibly be accused of having market power that they are protecting with their reactive above-cost price cuts.

Second, airline hub-and-spoke systems of price discrimination are more vulnerable to being undercut by rivals who provide only the high value slice of the system because an entrant can provide flights on a single route without incurring the common costs of servicing the rest of the hub-and-spoke system. Theaters or retailers may be somewhat less vulnerable to this problem. A deviating theater may try to fill its seats entirely with adult moviegoers, but that will be difficult to do, both because they are often accompanied by children and because selling only to adults may not produce enough customers to fill all a theater’s show times and cover common costs. Likewise, a deviating retailer may have difficulty getting the foot traffic to cover its common costs by selling only to high demand consumers. Thus, while deviations will occur in theater and retail markets, they are less likely to be profitable because it is harder to gain a disproportionate share of the high end customers. In contrast, an airline entrant can offer nonstop service on a single route without incurring the common costs of running a hub-and-spoke system at all. It thus has especially high incentives to deviate from the optimal price discrimination schedule.

Accordingly, in a competitive market for hub-and-spoke systems, each hub-and-spoke airline will offer the price discrimination schedule that maximizes the output of the entire hub-and-spoke system when they can, but will frequently have to deviate from that schedule by sharply reducing prices on nonstop flights to or from their hubs when entrants try to take just that slice of the market. They will lower price to any level that still exceeds the incremental costs of those flights, but this price reduction means these nonstop flights will cover a smaller share of the common costs of the system than before. When that is the case, entry that reduces prices for nonstop flights may not be desirable because: (1) the price reduction does not stand alone but rather reflects a transfer payment to nonstop customers on that route from connecting customers and nonstop customers on other routes who benefit from the flights partly supported by demand from those connecting customers, and (2) the deviation from the optimal price schedule lowers total flight output across the hub-and-spoke system. Firms in a fully competitive hub-and-spoke market would thus naturally respond to single route entrants by lowering prices to any level above that route’s incremental costs (even though the new price covers a smaller share of common costs than before), which will then drive such entrants out and allow the firms to raise prices on that route back to the price that matches the output-maximizing price schedule for the hub-and-spoke system.

In short, the observed pattern of single route entry, reactive above-cost price cuts by hub

---

185 If an incumbent airline faces a more efficient entrant, it will not be able to lower prices enough to maintain a significant volume of hub passengers, and will thus have to rely mainly on connecting passengers. This is how American airlines dealt with the lower cost competition provided by Southwest Airlines. 140 F. Supp. at 1181-82. Such a great reliance on connecting passengers may well lower the efficiency of the hub-and-spoke system as a whole, but does shift hub passengers to a clearly more efficient provider.
incumbents, exit by the single route entrant, and restoration of higher prices thus can be explained by fully competitive behavior. One need not assume that the incumbent airline must have monopoly power that it is trying to protect it through strategic pricing. Indeed, the non-monopoly explanation is more consistent with the empirical evidence that the airline industry has not only failed to enjoy monopoly profits, but has been unable to sustain even a competitive rate of return for any five year period since deregulation. This also explains why firms do not cut prices any more when a newly-formed entrant enters a route than they do when an existing airline does.

Another concrete illustration may help. Suppose the cost of making either product A or B separately is $60. The cost of making them jointly in a process that produces one of A for every one of B is $100, which includes common costs of $40 incremental costs of $30 for either one. The markets for A and B are competitive, with numerous producers, none of whom has the market power to earn positive economic profits. It is cheaper to make A and B together than separately, so a separate producer cannot ultimately survive in the market. But suppose that (when no separate producers are present) competitive joint producers find that the price schedule that maximizes total output is to charge $65 for A and $35 for B. This might be the case if, given differing demand for A and B, this price schedule would produce an equal number of customers for A or B. A joint producing firm might be tempted to lower the A price below $65 to sell more A, but to cover common costs it would then have to raise the price for B to over $35. This would reduce B sales, and thus total market output would decline since A and B are produced in a one-to-one ratio. This would produce unmet demand for A at the lower price that some producer is likely to respond to by raising prices back to $65 for A, and selling B and $35 to B customers that were priced out of the market. In this way, competition would restore the output-maximizing price schedule that should reflect the competitive equilibrium among joint producers.

Now suppose a separate firm enters the market producing only A and charging $60 for it. The competitive joint producers will then respond to this separate entry by lowering the price for A to $59.99 to retain their sales. But they have to cover their common costs, and cannot charge less for A and B combined than $100 since that is the cost of making them. So they will raise the price for B to $40.01. This price increase will not be constrained by competition in B because separate provision of B costs $60. But the joint producers also cannot charge more than $100 for A and B combined because they are in a competitive market that will drive the combined price down to joint costs. As long as the separate entrant remains in the market, overall output will be reduced because, since 65-35 was the price ratio that maximized output, 60-40 must necessarily result in lower output. Thus, although the entry reduced the price for A, it basically just caused a transfer payment to A consumers from B consumers, and decreased total output of A and B combined. Once the entrant is driven out of the market by the joint producers’ price reduction in A, they will raise prices for A again, thus restoring the output-maximizing price schedule.

This analysis undermines the intuition that something nefarious is going on when an

---

186 See Dorman & Baumol, On Cures That Bring Their Own Diseases, draft available from author, at 4; see also Baumol, Ubiquitous Discriminatory Price Taking, supra note, at 8 (noting that airline investments earn a lower return than stock indexes).

incumbent airline lowers nonstop prices to above-cost levels in response to single route entry, and then raises them again after entry. Both price changes can be explained by the simple reality that the fact of entry (at a particular price) has changed the market price on the nonstop route and thus requires a readjustment of the price discrimination schedule, and the fact of exit makes the old price discrimination schedule optimal again.\textsuperscript{188} Indeed, this analysis turns on its head the intuition that reactive above-cost price-cuts are used to foil the predictions of contestable market theory. To the contrary, if airline markets are in fact contestable, then such contestability will force airlines to engage in revenue-maximizing discriminatory pricing to cover common costs,\textsuperscript{189} which can only be maintained through reactive above-cost price-cuts.

Perhaps a more profound implication is that it means that – even if proponents were entirely correct about the predicted effects of a restriction on reactive price cuts on individual airline routes – those predicted effects would likely be undesirable. If proponents are correct, their restrictions will lead to lower everyday prices on nonstop flights from concentrated hubs. But obtaining these benefits means deviating from the price discrimination schedule that maximizes the overall output of the hub-and-spoke system. There is no particular reason to think that overall result would be desirable. It would be similar to legislating lower prices for adult movie tickets or filet mignon than the unregulated market would produce. Adult moviegoers and filet mignon eaters will be better off, but prices would have to rise for nonadults and eaters of less cuts of meat, and the overall output of movie exhibitions and meat would go down since the new price schedule would no longer be the one that optimizes output. Likewise, even if the restrictions lowered prices for nonstop hub flights, that would make nonstop fliers from hubs to spokes better off, but raise prices on the rest of the hub-and-spoke system. There is no particular warrant in antitrust law for imposing such a distributional transfer by legally restricting competitive above-cost pricing. Indeed, even left standing along, these distributional effects are likely to involve an undesirable shift from low to high income customers. Worse, this distributional effect will have been purchased at the cost of imposing a reduction in the overall output of flights between cities connected by hub-and-spoke systems, which will lower total social efficiency and overall consumer welfare.

But even if we assume a given reactive above-cost price cut is protecting market power, that does not mean that rules restricting them would be desirable, as I show next.

\textbf{IV. RESTRICTING ABOVE-COST PRICE CUTS HAS ADVERSE EFFECTS EVEN WHEN THE INCUMBENT DOES HAVE MARKET POWER AND IMPLEMENTATION DIFFICULTIES ARE IGNORED}

The foregoing means we cannot assume a reactive above-cost price cut either reflects or protects market power. Rather, it may reflect a competitive practice that restores the output-maximizing price discrimination schedule. And this is particularly true in the prototypical case of airlines reacting to entrants into hub markets that prompted the proposals to restrict reactive above-cost price cuts.

\textsuperscript{188} See Levine, \textit{Price Discrimination}, supra note.

\textsuperscript{189} See Baumol, \textit{Ubiquitous Discriminatory Price Taking}, supra note, at 1-3.
But even if we assume such market power has independently established without relying on evidence of discriminatory pricing or reactive price cuts itself, restrictions on reactive above-cost price cuts will still normally be undesirable. The traditional argument for thinking so stresses their administrative difficulties, which are indeed formidable and indeed even underestimated. But let me defer those issues until Part V. Here I am interested in addressing the issue whether, even if we assume away any implementation difficulties, the proposed restrictions on reactive above-cost price cuts would be desirable.

Although the proposed restrictions on reactive above-cost price cuts differ in their details, they all would effectively set a floor on incumbent pricing after entry.\(^\text{190}\) Professor Edlin would set that floor at the incumbent’s pre-entry price.\(^\text{191}\) Professor Williamson would instead ban an incumbent from expanding output after entry.\(^\text{192}\) But every output ceiling implies an associated price floor. The Williamson rule would allow the incumbent to cut prices, but only to the extent necessary to maintain output after the entrant has added its own output to the market. Thus, although the Williamson output-ceiling would allow prices lower than the Edlin approach, it does set an effective floor on post-entry incumbent pricing. The European doctrine in *Compagnie Maritime* and the proposals of the U.S. Departments of Transportation and Justice would effectively set a price floor at the level that “clearly” or “substantially” (and in the E.U. doctrine maybe “selectively”) falls below the price that would maximize the incumbent’s short term profits after entry.\(^\text{193}\) Likewise, Professors Ordover and Willig and others had earlier proposed a similar test without the “clearly” or “substantially” or “selectively” qualifier.\(^\text{194}\) Since an entrant adds output to the market, the incumbent’s normal short-term profit-maximizing response to entry would be to constrict output somewhat, thus usually indicating a somewhat higher price floor than the Williamson rule, which allows the incumbent to lower prices further to maintain its pre-entry output.\(^\text{195}\) In any event,
whichever sets the lowest price floor, all of them effectively set some floor on post-entry incumbent prices.

Such a restriction on above-cost price cuts cannot, by definition, protect an entrant that is no less efficient than the incumbent. Nor do the proponents claim their restrictions would protect entrants who are just as or more efficient as the incumbent. Rather, they focus on the claim that protecting less efficient entrants is desirable. Their essential claim is that the restrictions will either encourage additional entry by these less efficient entrants, or prompt incumbents to lower pre-entry prices (or expand pre-entry output) to avoid such entry, either of which will enhance consumer welfare and allocative efficiency by lowering prices below their normal monopoly levels. At points, some proponents also suggest that, while these encouraged entrants may initially be less efficient, they may, if protected by the proposed restrictions, be able to stay in the market long enough to become just as efficient as the incumbent. Assessing these claims thus requires comprehensively assessing the effects of the proposed restrictions on the likelihood and consequences of each type of possible entrant, and on the behavior and creation of incumbents.

Section A begins with the proponent’s paradigmatic case: entrants who are (and will remain) less efficient than the incumbent. It notes a point that proponents have neglected: some of these less efficient firms would have entered with or without the restrictions. For them, the effects of the restrictions would be entirely adverse. They would raise post-entry prices, thus lowering output, harming consumer welfare, and causing allocative inefficiency. Further, they would cause a shift of production to less efficient firms, a loss of incumbent efficiency, and a wasteful infliction of uncompensated transition costs. Other less efficient firms might be encouraged to enter by the protection the restrictions offer. But these less efficient entrants will be inevitably be driven out when – by passage of time or loss of monopoly power – any restriction on reactive price cuts by the more efficient incumbent expires. Since long run returns are impossible, the only encouragement would be that these restrictions can increase the length of the short run period when they remain in the market. But such short run returns will rarely be worth the capital costs of entry. At best, the restrictions may provide some weak encouragement to less efficient entrants when entry costs are so low that less efficient entrants find it profitable to engage in hit-and-run entry, staying only for the short run period while the restriction lasts. Further, while such entry may well lower prices from pre-entry levels for those consumers who buy from the entrant in the short run, it can also give incumbents perverse incentives to raise post-entry prices to speed the day when the restriction expires, which would raise prices for the majority of consumers. Thus, even when the restrictions do encourage additional less efficient entry, the net effects on consumer welfare and allocative efficiency will be mixed. Any encouraged entry would also shift production to less efficient firms, wastefully impose uncompensated transition costs, and lower the efficiency of incumbents.

In short, even if one focuses only on less efficient entrants, the overall effects of the restrictions are almost certainly negative. Where the less efficient entrant would have entered

includes his own version of a clearly-or-substantially qualifier by allowing a 10% increase in output over the demand-adjusted prediction in the hopes that this will circumvent problems with ascertaining demand-adjusted output. Id. See supra at II (defining costs to satisfy this condition).

See Edlin, supra note , at 945-49, 973-78; Williamson, Predatory Pricing, supra note , at 308.

See Williamson, Predatory Pricing, supra note , at 296, 298 n.43, 303-04, 313; Edlin, supra note , at 975 & n.95, 977.
anyway, there will be negative effects on consumer welfare and productive efficiency. Where the restriction encourages the less efficient entrant to enter, there will be a mixed effect on post-entry consumer welfare and negative effects on post-entry productive efficiency.

But in fact one cannot assess the full effects of the proposed restrictions by limiting one’s consideration to less efficient entrants. Rather, as Section B points out, one must also consider the effects (ignored by proponents of these restrictions) on entrants who are just as or more efficient as the incumbent. For such entrants, the effects of the restrictions are unambiguously adverse. They raise post-entry prices, lower output, harm consumer welfare, and lessen allocative inefficiency. Further, they lessen the creation of more efficient firms by shifting effort from creating efficient entrants towards creating less efficient ones, and by lessening the returns to successfully creating an entrant that is more efficient than the incumbent.

Section C considers the possibility that entrants will become more efficient than the incumbent over time. It concludes that this is often undesirable because it often depends on a decrease in the incumbent’s efficiency. If, in contrast, it is achieved solely by an increase in entrant efficiency, then the restrictions should be unnecessary because capital markets would fund such entrants anyway. Further, the post-entry effects of the restrictions for such entrants are entirely adverse.

Section D addresses the effects of the proposed restrictions on pre-entry incumbent behavior. It concludes it is doubtful the restrictions will induce incumbents to lower pre-entry prices, and that even if they do so, such a regime of enforced limit pricing is legally inconsistent with the argument for banning reactive above-cost price cuts. More important, proponents have neglected to take into account that, by lowering the rewards for creating an incumbent that is more efficient than other market options, the restrictions reduce the incentives for the innovation and investment necessary to create those more efficient incumbents in the first place.

Section E summarizes the effects and concludes the tradeoffs almost certainly cut against the proposed restrictions even if one ignores implementation difficulties. And Section F rebuts the possibility that the problems with the restrictions can be avoided by modifying the market power requirement.

A. Effects on Likelihood and Consequences of Less Efficient Entry

I begin by considering the effects of the restrictions on the likelihood and consequences of entry by firms that are less efficient than the incumbent throughout the period of any restriction on reactive above-cost price cuts. Such less efficient entrants form the centerpiece of the proponent’s arguments for restrictions. An entrant can be less efficient either because its costs are higher than the incumbent’s, or because its quality is lower at the same cost. Since the latter amounts to saying the entrant has higher costs of delivering the same level of quality (that is, higher quality-adjusted costs), I will also call either a case of a higher-cost entrant. In the long run, the incumbent firm with a cost advantage can drive such entrants out of the market by cutting its prices to a level above the incumbent’s costs but below the entrant’s costs, which the entrant cannot profitably match. Likewise, an incumbent with a quality advantage can in the long run drive the entrant out of the market by matching the entrant’s price, which effectively means a lower quality-adjusted price.

---

199 See Edlin, supra note , at 944, 955-60, 962-63, 965, 973-78; supra at Introduction.
Some of these less efficient entrants would have entered even without the restrictions because the short run profits of doing so are sufficiently enticing. In those cases, the restrictions are unambiguously adverse for both consumer welfare and productive efficiency. Other less efficient entrants might have been induced to enter by the restrictions. In their case, the restrictions will have a mixed consequences for consumer welfare but a negative effect on productive efficiency. Further, the restrictions will encourage additional entry by relatively few less efficient entrants because in the restrictions will eventually expire and thus cannot protect less efficient entrants in the long run.

1. Consequences for Less Efficient Entrants Who Would Have Entered Without Any Restriction. -- Many less efficient entrants would have entered even without the protection of a rule that restricts above-cost price cuts. For cases involving such entrants, the consequences of the restriction will be unambiguously negative.

(a) Why Less Efficient Entrants Often Enter Without Any Restriction on Reactive Above-Cost Price Cuts. -- Although entrants who are just as or more efficient as the incumbent will not be deterred under a cost-based test, the converse does not follow that all less efficient entrants will be. To the contrary, less efficient entrants will often enter a monopoly market under a cost-based test even though they do not have the protection of a restriction on above-cost price cuts. After all, by hypothesis, the preexisting market was priced at supracompetitive levels. Thus, even a less efficient entrant can offer a lower price that exceeds its costs and thus reap a supracompetitive profit in the short run.

True, in the long run, the more efficient incumbent will be able to drive out the less efficient entrant with above-cost price cuts. But the short run may not be so short. The longer it lasts, the greater the entrant’s profits will be. And the longer lasting any price cut must be to drive out an entrant, the less likely it is to be a more profitable incumbent strategy than accommodating entry at higher prices. This can be obscured if the airline industry is the paradigmatic case one has in mind. While the airline industry proves a poor paradigmatic case because reactive price cuts there probably do not protect market power at all,200 the airline industry does have a combination of features that make it more susceptible driving out less efficient entrants with very short term price cuts. Namely, in the airline industry, incumbent capacity is easy to expand, and buyers cannot realistically engage in significant long-term contracting and or storage. In markets lacking this combination of features, a reactive price cut designed to drive out entrants cannot be nearly so temporary, for the following reasons.

If capacity cannot easily be expanded, then it may take the incumbent a significant period to expand output enough to drive out a less efficient entrant.201 True, for physical products made in plants, the incumbent may maintain some excess capacity for just this purpose. But the costs of doing so may not be worth bearing.202 Moreover, even in such a plant, expanding capacity may not

---

200 See supra at III.

201 This generally is not an issue when, instead of protecting market power, the incumbent is reacting to an entrant who is undercutting competitive price discrimination because in that case the incumbent does not need to expand output. It just needs to reallocate output now going to low demand buyers. Indeed, overall output will likely decline. See supra at III.

202 Williamson simply assumes that under any rule the incumbent will invest to maintain enough excess capacity to be able to reduce entrant profits to zero. See Williamson, Predatory Pricing, supra note, at 294, 297-98, 310 n.66, 314. But in many markets, this may be too costly to be profitable at all, and in all markets it involves a tradeoff between
be as easy as turning on a switch. Extra personnel have to be added or trained, or if the incumbent has also kept excess workers idle, their skills will be rusty. These problems are likely to be even greater in service industries. The airline industry seems exceptional in this regard because the relevant capital goods and personnel are so easy to move to a targeted market.

Even if the incumbent can rapidly expand output, buyers will have incentives to respond to any price cut they anticipate is temporary by stockpiling as much as possible of the good. Thus, rather than the incumbent’s expanded output replacing purchases from the entrant, buyers have incentives to buy as much as they can from both and stockpile their purchases. This effectively makes any temporary price cut more permanent. This is not a feasible consumer reaction in the airline industry because future travel needs are sufficiently uncertain that it is hard to stockpile too many tickets. But it seems far more likely to be a feasible reaction in markets where the incumbent is just turning on plant capacity to make a physical good, which was the one case where incumbent output expansion seemed likely to be faster than entrant output expansion.

Finally, in any market where buyers engage in long-term contracting, an entrant facing the prospect of a reactive price cut can try to contract with enough buyers to assure its survival for long enough to recoup the costs of entry. This is not so feasible in the airline industry where most purchasing is done on an effective spot market for each trip.\footnote{203} But it is feasible in many markets. Williamson recognizes long-term entrant contracting is possible, but assumes it will be rare for three reasons. First, he assumes it is generally inefficient. But on many markets it is used, suggesting it is efficient in those markets. Second, he assumes customers won’t want to commit themselves unless the entrant has committed itself by incurring fixed costs. But any long-term contract can be made contingent on the entrant incurring those costs or initiating actual entry. Third, he assumes the dominant firm will contest these pre-entry sales. True, but if so then the “temporary” price cut will be even less temporary, extending to pre-entry periods and beyond if the incumbent itself offers long-term contracts to compete. At the extreme, the dominant firm will have to keep offering competitive prices all the time to fend off entrants.

Limits on these factors do, however, mean that sometimes relatively short term price cuts can drive out less entrants. Stockpiling can be impossible or costly if storage expenses are high, goods are perishable, or future needs are difficult to estimate. Stockpiling will also be limited if buyers mistakenly expect the price cut to be permanent. The more difficult or costly storage is, and the more mistaken consumer expectations are, the more any market resembles that of an effectively non-storable good like airline flights.

Long-term entrant contracting will also be limited to the extent it has inefficiencies or buyers face collective action problems. Markets with one buyer face no collective action problem because that single buyer can itself determine whether the entrant stays in the market. Thus, a single buyer would compare the entrant’s long term contract price to the expected incumbent price stream, which

---

pre-entry profits and post-entry hazards that may not be worth making. Williamson’s contrary conclusion is based on what he admits is the “arbitrary assumption” that incumbents strictly prefer avoiding post-entry hazards to earning pre-entry profits. \textit{Id.} at 314. There is no reason to think this assumption is accurate, and thus incumbents often will not have sufficient excess capacity on hand.

\footnote{203} Even in the airline industry, though, corporations can and do negotiate for long-term discounts from regular prices. The main problem there has been that the incumbent airlines are the ones with those contracts, thus making it harder for entrants to break in. See 140 F. Supp. 2d at __.
features a temporary cut and then monopoly prices. But markets with many buyers face a collective action problem because each individual buyer will correctly figure that its single long-term contract will not significantly affect the odds that entry will occur or be successful. Judge Easterbrook concludes any collective action problem can be avoided by having each buyer enter a long-term contract with the entrant at a price below pre-entry prices and contingent on the entrant getting enough commitments to be successful. Alas, his reasoning is flawed. Such a single contract cannot make the buyer better off unless it meaningfully changes the odds of successful entry, and this is true no matter what the individual buyer hypothesizes the end result will be. If the entrant ultimately will not enter, such a contract gains the buyer nothing. If the entrant will enter but be driven out, then the entrant will not supply the product in the long run, and in the short run the buyer will be better off accepting the incumbent’s temporary price cut to a level below the entrant price. If the entrant will enter and succeed, the buyer need not enter into the long term contract to get the benefit of entrant prices in the long run, and in the short run will still be better off accepting the incumbent’s temporary price cut. Thus, although buyers collectively have an incentive to enter long-term contracts with entrants to encourage their entry, individually buyers do not in markets with many buyers. The greater buyers’ collective action problems and the shorter the term of an efficient contract in their market, the more other markets will resemble markets with little long-term contracting like the airline industry.

Accordingly, it is hardly the case that any less efficient entrants who could undercut a monopoly price would enter the monopoly market regardless of the prospect of reactive above-cost price cuts. It is simply the case that many of them would. And in these cases, the effects of the proposed restrictions are unambiguously undesirable.

(b) The Undesirable Consequences.-- For those less efficient entrants who would enter even without a restriction on post-entry incumbent prices or output, the restrictions can have no positive effect on their likelihood of entry. Rather, the only consequences will be on post-entry price competition, and those will be unambiguously negative.

The restrictions will all limit the post-entry competition that otherwise would have occurred between incumbents and less efficient entrants. Below-cost price cuts would be prohibited even without the restrictions. Thus, where the restrictions have bite, they will prevent incumbents from making above-cost price cuts that lower their price as much as they otherwise would have. Indeed, an unrecognized cost of the restrictions is that they would give incumbents affirmative incentives to raise prices. The reason is that these restrictions would all expire once the incumbent

---

204 See Easterbrook, supra note , at 270-71. See also Carlton & Perloff, supra note , at 336-37 (also assuming buyers would be willing to contract with the entrant at a price below pre-entry prices).

205 Even if there are a multitude of consumers, there may be sufficiently few buyers up the distribution chain – like retailers or wholesalers – to enable them to enter into long term contracts with entrants. Easterbrook, supra note , at 271. On the other hand, retailers or wholesalers also have incentives to enter into Coasean bargains with the monopolist to split the supracompetitive surplus rather than eliminate it, because increased costs can be passed on to consumers in higher prices, and the resulting decreased volume can be made up for by getting a share of the monopoly profits. See IV Areeda, Hovenkamp, & Solow, Antitrust Law at 204-06 & n.4 (rev. ed. 1998).

206 Depending on market circumstances, it might be that the price floor set by the Williamson or short-term profit-maximization rules are below the price an unrestricted incumbent would want to charge post-entry anyway. In those cases, though, the restrictions have no bite.
loses enough market share to the entrant to fall below whatever threshold is deemed necessary to establish monopoly or market power in that market. Edlin stipulates that his proposed price floor applies only “until the entrant’s share grows enough so that the monopoly loses its dominance.” Edlin, supra note , at 945, 968-69. Williamson applies his rule only to dominant firms, which he defines as having a market share of at least 60% and enjoying significant entry barriers. See Williamson, Predatory Pricing, supra note , at 292-93. Although Williamson’s initial statement of his rule also applied to collusive oligopolies, id., he later recognized that applying his rule to such cases would have the undesirable effect of aiding oligopolistic coordination and thus seems to abandon that extension. See Williamson, Williamson on Predatory Pricing II, 88 YALE L.J. 1183, 1195 (1979) [hereinafter “Williamson, Predatory Pricing II”]. Likewise, U.S. and European antitrust law and the proposed Department of Transportation regulation all require some level of monopoly or dominant market power. See supra at I.A, infra at IV.E.
the restrictions will prevent the more efficient incumbent from expanding its output as much as it otherwise would have, thus shifting production to the less efficient entrant. This shift of post-entry output to a less efficient producer alone necessarily lowers productive efficiency.

Further, unless market demand sharply increases with entry, the incumbent will have to significantly lower its output from pre-entry levels because the entrant is taking a large share of market output and the restriction prevents the incumbent from lowering prices in order to maintain its old output. This is certainly true under the Edlin rule which forbids any reduction in pre-entry prices. It also follows under a short-term profit-maximization even we assume that, both before and after entry, the incumbent monopolist sets a short-term profit-maximizing price that implies subcompetitive output levels. The reason is that whatever output the entrant takes away amounts to a leftward shift in the incumbent’s residual demand and thus (absent an offsetting increase in total market demand) implies a lower incumbent output will maximize its short-run profits. An even more dramatic reduction in output will result if we take into account two additional factors. First, sometimes the pre-entry price will be an (unsuccessful) limit price rather than a profit-maximizing price, and thus the restriction can affirmatively require the incumbent to raise prices to comply with the post-entry price floor. Second, the restriction, as noted above, gives incumbents perverse incentives to charge a post-entry price above the profit-maximizing level to speed the end of the restriction.

Although the Williamson rule does not require a post-entry output reduction, it will often induce one. After all, it sets a ceiling on output, so output can only stay the same or go down. On average, then, incumbent output has to decline somewhat. More important, the incumbent has affirmative incentives to reduce output in any case where the output ceiling actually protects an entrant from being driven out of the market in the short run. There are three reasons for this. First, reducing output will likely increase the incumbent’s short-term profits given that the entrant is now taking up some market output. Second, where maintaining output cannot drive out this entrant and restore monopoly profits, the incumbent has no reason to sacrifice short term profits by maintaining output. Third, to the contrary, it is reducing output that will bring closer the day when the incumbent’s market share erodes sufficiently to lift the restriction and allow the incumbent to drive out the entrant. This means that under the Williamson rule, the incumbent who is prevented by the output ceiling from driving out an entrant actually has incentives to speed the day when the rule expires by pricing above the short-term maximizing price, which means setting output below that level. The result is that, in any case where it actually has bite – that is, actually protects the entrant from above-cost pricing – the incumbent will set the same short term price under the Williamson output ceiling as under a profit-maximizing price floor. Williamson sees the first factor but apparently not the other two, and in any event effectively excludes all of them from his model by simply assuming that in response to entry the incumbent will always set the maximum output allowed by the legal rule. But we must assume incumbents will be dynamic not just in their responses to entry but also in their responses to legal rules that frustrate efforts to make entry unprofitable. Thus the Williamson rule will on average produce a reduction in post-entry output,

---

208 Williamson himself assumes his rule would never protect an entrant, but he is mistaken for reasons explained infra at __.
209 See Williamson, Predatory Pricing, supra note , at 294 & 295 n.35, 297-98, 310 n.66.
and will in fact do so in every case where the rule prevents the incumbent from driving out the entrant.

To the extent the restrictions do make the incumbent reduce its output from pre-entry levels, it subjects the incumbent to a wasteful process of contracting production during the restriction period, which it then has to turn around and expand after the restriction expires. That may entail costly and disruptive layoffs, contractual breaches or changes, idling and maintaining capacity, building renovations and the like. Such contractions and closings are a necessary cost of competitive markets, where they have the virtue of signaling when resources should switch from one firm or industry to another. But they constitute sheer waste when a more efficient firm is being forced by regulation to mothball capacity that ultimately will return to the market. Even when the infliction of these transition costs does not affect the operating efficiency of the incumbent, they nonetheless reflect real costs that will be visited on owners, workers, and others who contract with the incumbent. This will increase the costs of contracting with the incumbent, and reduce the returns for having created an incumbent.

Indeed, if the restrictions causes a post-entry reduction in incumbent output, it will probably affirmatively reduce its operating efficiency, for various reasons. First, to the extent the incumbent’s efficiency advantage results because of economies of scale or scope that still apply at large outputs, a reduction in its scale or scope will make it less efficient. Second, the incumbent has presumably selected a plant size that minimizes the short-run costs of producing its pre-entry output: thus any decline in output increases its short-run costs. Third, because the restriction on reactive price cuts may require the incumbent to mothball capacity and layoff workers in the short run, it may disrupt an efficient operation. Machines that were well-oiled may become rusted, or new workers may need to be hired and trained. When full production starts up again, the costs may thus be higher, or the quality lower. If any of these three factors hold, then, a restriction that causes the incumbent’s output to drop will also decrease its productive efficiency. That would mean that the restriction would effectively has shifted the entire market to less efficient production: either to the less efficient entrant or to an incumbent who is less efficient than it otherwise would have been.

In sum, for those less efficient entrants would have entered without any post-entry above-cost floor on incumbent prices, all the restrictions would inflict harm to consumer welfare, a loss of allocative efficiency, a loss of productive efficiency, and the wasteful imposition of uncompensated transition costs.

2. Effects for Less Efficient Entrants Whom the Restrictions Encourage to Enter. – Other less efficient entrants might be encouraged to enter because the restrictions set an above-cost floor on incumbent post-entry pricing. But this encouragement will be relatively weak because such restrictions cannot prevent such less efficient entrants from being driven out of the market in the long run. Where the restrictions do encourage entry by less efficient entrants, the consequences will be mixed. Consumers who buy from the entrant will pay lower prices than they otherwise would

210 An economy of scale results when average costs for a product fall as firm output increases, whereas an economy of scope results when two products can be produced more efficiently together than separately. See Carlton & Perloff, supra note , at 35-40, 44-47.

211 Cf. Williamson, Predatory Pricing, supra note , at 297, 300-02, 309-10 (assuming incumbent plant size minimizes the short run costs of making the pre-entry output, so that any decrease or increase in incumbent output necessarily reduces its efficiency and raises its costs).
have. But the majority of consumers stuck buying from the incumbent may pay more. Further, productive efficiency will suffer and wasteful uncompensated transition costs will be imposed.

(a) Why Restrictions on Reactive Above-Cost Price Cuts Can Provide Weak Encouragement to Entry by Less Efficient Firms. – Less efficient entrants will sometimes be encouraged to enter by restrictions that set an above-cost floor on incumbent post-entry pricing. The reason is that such restrictions can effectively lengthen the short run period when a less efficient entrant can hope to sell at prices that exceed its own costs. This will sometimes provide the marginal increment of additional profits that the less efficient entrant needs to make its total expected short run profits higher than the capital costs of entry.

But this encouragement will be weak because the additional increment can be relatively small and short term. As noted above, less efficient entrants will often be able to survive in the market for some short run period. The restrictions will increase the prospective profits from entry by increasing the length of this short run period. But the restrictions cannot offer less efficient entrants any long term protection. The Edlin and Williamson rules would expire in 12-18 months. At that point, the more efficient incumbent can offer above-cost price cuts that will drive the entrant out. Further, all the restrictions would expire once the entrant expands enough to deprive the incumbent of whatever market share is necessary to establish its monopoly or market power. That may be far less than 12-18 months when the incumbent cannot match an entrant price that undercuts it. Consumers are likely to rapidly switch to the lower-priced entrant, especially when (as under the Edlin rule) the entrant price is a full 20% below the incumbent price. The incumbent’s market share will accordingly plummet quickly below whatever market share is necessary to trigger the post-entry price floor, and then the incumbent will be free to adopt above-cost price cuts that drive the less efficient entrant out of the market.

In markets where there are few physical limitations on entrant expansion, the drop in incumbent market share may be nearly instantaneous. In particular, in the airline industry that was the genesis of these proposals, airplanes are relatively easy to move when demand increases on some routes, and relatively easy to lease if total demand for the airline rises. There thus may be no effective barrier to an entrant expanding to take all the consumer demand that might respond to its lower prices. In many technology or intangible markets, there may likewise be few physical limitations to expanding entrant market share: for example, when output expansion requires merely more downloads of software.

Even if the less efficient entrant must ramp up its capacity over time, an entrant with a price advantage will sooner or later take enough market share to deprive the incumbent of its monopoly share. It seems likely to be sooner rather than later when one considers three additional points. First, monopolists rarely have 100% market share, but rather normally begin the post-entry period with a market share only somewhat above whatever threshold defines monopoly power. They thus need not lose much market share to lose their monopoly power. Second, as noted above, such post-entry price floors give incumbents incentives to raise prices and lose market share as rapidly as possible to bring closer the day when the restriction expires and they can drive the entrant out and restore monopoly pricing. Third, while efficient firms are limited in number, the world of less efficient firms is hardly scarce, so that if the Edlin price umbrella encourages entry by any of them, it is likely to encourage entry by lots of them, all of which can ramp up capacity simultaneously.
Finally, the relevant set of less efficient entrants is particularly likely to be in industries that permit rapid expansion. That relevant set consists of those less efficient entrants whose entry might actually be caused by an above-cost floor on post-entry incumbent pricing. For there to be that causal link, two things are necessary. First, it must be the case that these less efficient entrants would not have entered without the restriction. And that, as noted above, is disproportionately likely to be in industries where capacity can be expanded rapidly because that permits incumbents to quickly drive out entrants with temporary price cuts. Where capacity cannot be expanded so rapidly, then the restrictions on reactive above-cost price cuts will last longer, but are less likely to have been necessary to encourage to less efficient entrant to enter at all. Thus, the very factor that makes post-entry price floor likely to encourage less efficient entry – an industry where capacity can be expanded rapidly – also tends to mean that any post-entry price floor will be very short-lived. Second, it must be the case that the restrictions do provide a meaningful inducement to less efficient entry. Because the restrictions only offer protection for a limited time (12-18 months at the outside under the Edlin and Williamson rules), they are unlikely to encourage less efficient firms to enter when entry requires large capital investments that cannot be recouped in a short period. Yet such large capital investments are the major reason why entrants might need time to ramp up capacity. Thus, the set of less efficient entrants whom the restrictions might actually encourage to enter probably did not need large capital investments and are thus more likely to be easily expandable.

In short, while the proposed above-cost floors on incumbent post-entry prices should encourage some additional less efficient entry, that encouragement will be relatively weak because the protection offered by such price floors will be short-lived. Less efficient firms will realize that the restrictions will not enable them to stay in the market in the long run. Thus, they will be encouraged to enter only when this marginal prolongation in the short run period during which they can remain in the market exceeds the sunk costs of entry. Where entry costs are significant, this will be relatively rare.

On the other hand, where entry costs are sufficiently small, such restrictions might encourage less efficient entrants to not only enter but even make a series of repeated entries, leaving the market when the restrictions expire and returning once the incumbent has re-established monopoly or market power. But if entry costs are so low that such repeated entry and exit is feasible, then less efficient entrants will generally not be discouraged by the prospect of reactive above-cost price cuts anyway, so the marginal encouragement would be small. Further, in industries that require so little capital investment, incumbents are unlikely to have any market advantage that makes them more efficient than entrants at all.

There is an additional reason why the Williamson and short-term profit-maximizing rules would provide particularly weak encouragement to less efficient entry. Namely, these rules set a post-entry price floor that is often too low to prevent the incumbent from driving out the less efficient entrant with an above-cost price cut. In such cases, those rules cannot offer any

---

212 Carlton & Perloff, supra note , at 337-38 (noting that predatory strategies cannot succeed
213 See Edlin, supra note , at 957-59, 977-78, 981-82 (rejecting short-term profit-maximization test because a price at that level can sometimes drive out less efficient entrants); Williamson, Predatory Pricing, supra note , at 297-98 (modeling case where maintaining the incumbent’s pre-entry output level does not leave enough market output left for the entrant to operate at a large enough scale to profit at a lower price); Areeda & Hovenkamp, supra note , at 332-333; Scherer, supra note , at __.
protection to less efficient entrants that might encourage their entry. Since they will be ineffectual in protecting less efficient entrants, their only post-entry effect in such cases will be the harmful one of sometimes preventing the incumbent from cutting prices even further (that is, below the price floor), which would have benefitted consumer welfare and increased allocative efficiency.214

Indeed, Professors Ordover and Willig assumed their short-term profit-maximization test could never protect a less efficient entrant.215 Their reasoning was that if the incumbent priced above entrant costs, it would lose all production to the entrant, thus pricing slightly below a less efficient entrant’s costs would always be more profitable alternative. But if the entrant is capacity constrained over the short run, then the entrant will not be able to take all market output. Instead the incumbent will be left with a residual demand curve determined by subtracting entrant output from the total market demand curve, and pricing above cost will likely maximize the incumbent’s short run profits. Professors Ordover and Willig would also apply their test to condemn an above-cost price cut in one product if it diverted sufficient profits from another substitute product made by the incumbent.216 But if the substitute product enjoys any supracompetitive profit margin, this test would prevent what is effectively an efficient price cut that brings the price on the combination of products closer to their cost, and would (quite undesirably) protect a less efficient entrant in one product to preserve the incumbent’s supracompetitive profits in the other product. Still, if the entrant is not capacity constrained and such substitution effects are irrelevant, Ordoever and Willig appear to be correct that their price floor cannot protect less efficient entrants absent erroneous application. Further, even if an entrant begins with a capacity constraint, eventually its output will rise sufficiently to raise this problem absent substitution effects. This confirms the point above that the short-term profit maximization test cannot offer any long term protection to a less efficient entrant. And if the goal is to deny protection to less efficient entrants, a price-cost comparison test will be better because it denies protection to less efficient entrants when capacity-constraints or substitution effects matter, and is generally easier to apply accurately.217

Likewise, Williamson also assumes his rule will never encourage entry by a less efficient firm. He reaches this conclusion by assuming that the incumbent always has the knowledge and desire to set pre-entry output sufficiently high that maintaining that output after entry will make entry unprofitable.218 But these assumptions about incumbent knowledge and desire are both false. Williamson himself recognizes that in fact no incumbent is that omniscient. Instead, there are a range of probabilities, so that the incumbent will have to set pre-entry output at an average which will sometimes make entry unprofitable but sometimes will not.219 Second, his premise that the incumbent will always want to set pre-entry output high enough to make entry unprofitable rests on what Williamson acknowledges is the “arbitrary assumption” that incumbents strictly prefer

214 Any benefits in such cases would instead have to be based the claim that the rule encourages a pre-entry incumbent output expansion that amounts to a form of limit pricing. See infra at IV.D.
215 See Ordover & Willig, supra note, at 18-19.
216 Id. at 20-21.
217 See supra at II.
218 See Williamson, Predatory Pricing, supra note , at 294, 297-98, 310 n.66. Williamson assumes an entrant having the same cost curve as the incumbent will be left at zero profits, which means a less efficient entrant with a higher cost curve would suffer an actual loss.
219 Id. at 294 n.33
avoiding post-entry hazards to earning pre-entry profits.\textsuperscript{220} If we instead adopt the more rational assumption that the incumbent attaches some positive value to pre-entry profits, they will make tradeoffs that lower pre-entry output somewhat, and will thus sometimes be unable to drive out a less efficient entrant under a rule that prohibits output expansions. Indeed, incumbents would have strong incentives to do so since any increased pre-entry profits will not have the time and uncertainty discount applied to fears of a decline in post-entry profits.\textsuperscript{221} Thus, although the encouragement to entry will be weak, the Williamson output ceiling will sometimes prevent the incumbent from being able to drive out a less efficient entrant.

The lack of encouragement to entry by less efficient firms will be even greater if the restriction is rendered ineffective (as discussed below) either by buffer zones established to escape the difficulty of adjusting for demand or cost shifts, or by a failure to regulate non-price reactions.\textsuperscript{222} It will also be even more ineffective if the restriction is defined to begin at a moment of entry that is not sufficiently early (and longlasting) to effectively restrain reactive price cuts that anticipate entry.\textsuperscript{223} Nor can these likely sources of regulatory ineffectiveness be easily avoided since doing so requires incurring the serious adverse effects of mistaken adjustments in price controls, freezing innovation, or a lengthier distortion of prices and innovation.\textsuperscript{224}

(b) The Effects of (Weakly) Encouraging This Additional Less Efficient Entry. -- Since any encouraged less efficient entrant cannot survive in the market once the restriction expires, the restriction cannot have any long-term beneficial effect on market pricing. Further, any short run effects may be very short indeed given the reasons noted above for thinking the restrictions will expire relatively quickly.

But such restrictions will have one clear positive short-run effect. Namely, those buyers who purchase from the less efficient entrant during this short run period will pay a lower price than they would have paid if that entrant had not been induced to enter by the restriction.

However, those buyers who continue to purchase from the incumbent during this short run period may or may not pay a lower price than they otherwise would have. The reasons are several, First, as noted above, incumbent monopolists have incentives to respond strategically to such restrictions by raising their prices to lose market share and speed the day when the restriction expires. The restrictions even give incumbents perverse incentives to raise prices above their short-run profit-maximizing level.\textsuperscript{225} Sometimes these perverse incentives can cause the incumbent to increase prices above its pre-entry level. It will not always do so because the addition of entrant output will itself lower the short-term profit-maximizing price of the incumbent by leaving less residual demand for the incumbent (absent an offsetting increase in total market demand). Thus, if the pre-entry price was at the short-term profit-maximizing level, then that same price is (absent a demand increase) likely to already be above the post-entry short-term profit-maximizing level. Whether going even further above that profit-maximizing level will be a cost-effective way to speed

\textsuperscript{220} Id. at 314.  
\textsuperscript{221} See also infra at IV.D (noting other reasons why the incumbent may not keep pre-entry output so high).  
\textsuperscript{222} See infra at V.B-C.  
\textsuperscript{223} See infra at V.A.  
\textsuperscript{224} See infra at V.  
\textsuperscript{225} See supra at \_\_\_
the expiration of the restriction will depend on the particular facts.

Second, as also noted above, the restrictions will generally require a reduction from the incumbent’s pre-entry output level that can reduce the incumbent’s productive efficiency. Increased incumbent costs will thus increase its short-term profit-maximizing price. Especially in combination with the fact that the restriction would give the incumbent incentives to raise prices above short-term profit-maximizing levels, this will further increases the likelihood that the incumbent will raise prices above pre-entry levels.

Third, sometimes the incumbent’s pre-entry price will reflect an attempted limit price (that the incumbent mistakenly set a bit too high to deter entry) that was below the short-term profit-maximizing level from the start. Because the restriction (in any case where it encouraged entry) makes it impossible to drive out the entrant, the incumbent will have no reason not to raise post-entry prices to at least the short-term profit-maximizing level until the restriction expires. Combined with the likely increase in that level because of increased incumbent incentives to charge over that level to speed the end of the restriction, this means the restrictions are especially likely to increase incumbent prices above pre-entry levels when pre-entry prices reflected attempted limit prices.

Accordingly, buyers who purchase from the encouraged less efficient entrant will pay less post-entry, but those who continue to purchase from the incumbent may pay more. And more buyers will be in the latter camp than the former. The reason is that the restrictions only apply as long as the incumbents have monopoly or market power. This normally means the incumbent will over a 50% market share during the period of any restriction, and that most consumers will accordingly be buying from the incumbent. Indeed, if monopoly power is required, it will probably be the lion’s share of consumers given most definitions of monopoly share thresholds. To be concrete, suppose that in the particular industry the incumbent has 100% market share and the minimal market share at which a firm will be said to have monopoly power triggering the relevant restriction is 70%. In the short run before the incumbent drops below its monopoly share, the restriction would allow the entrant to ramp up from 0% to 30% market share, and cause the incumbent to ramp down from 100% to 70%. If the rate at which the incumbent loses market share is constant, then during this period an average of 85% of buyers will continue to be buying from the incumbent.

The fact that most buyers will continue purchasing from the incumbent makes it more likely that the net effects are negative for consumer welfare. In this example, on average only 15% of buyer would benefit from lower entrant prices during this short run period. If the pre-entry price were $100, and the entrant priced at $80 (as it would under Edlin’s 20% discount rule), there will be a net harm to consumer welfare if the desire to speed the demise of the entrant causes the incumbent to raise prices to any level above $103.53.

In short, even in the case where the restrictions do encourage the entry of a less efficient firm that otherwise would not have occurred, the net effect on post-entry consumer welfare is mixed, and thus so too is the predicted effect on allocative efficiency. Other effects of the restrictions in such a case are unambiguously negative. Productive efficiency will suffer because by hypothesis the restriction here has resulted in a shift of market production to a less efficient firm. Further, the reduction in the incumbent’s pre-entry output will inflict wasteful transition costs and likely

---

226 A limit price is an above-cost price deliberately set by a monopolist below its short-term profit-maximizing level in order to preclude entrants. See Viscusi, Vernon & Harrington, supra note , at 168-69.
decrease the incumbent’s productive efficiency.

Finally, the capital costs of entry will be wasted because the less efficient entrant who was encouraged by the restriction to enter will eventually be driven from the market. Indeed, the less efficient entry encouraged by the restrictions would effectively amount to a form of wasteful rent-seeking. The entrant will be encouraged to expend those capital costs only because of the short term profits it earns by shifting producer surplus from the more efficient incumbent to itself. As we will see below, this transfer in the rewards for creating a more efficient product or method of production from the firm that created it to another firm that did not will reduce the incentives to invest in such efficient creation. But here the point is that some, and at the extreme all, of this transferred producer surplus will be dissipated by the expenditure of entry costs that otherwise would have been avoided. Such dissipation results in an efficiency loss.

B. Effects on Likelihood and Consequences of Efficient Entry

Proponents of restrictions on above-cost pricing have analyzed their effects on less efficient entrants and, to a lesser extent, on entrants that are initially less efficient but grow more efficient with time. But they have ignored the effects of their proposed restrictions when entrants are just as or more efficient as the incumbent. This one cannot do if one wishes to understand the full effects of these restrictions because many entrants are equally or more efficient than incumbents. After all, long term prospects of at least remaining in the market, if not besting the incumbent, are normally what motivates entry. Indeed, given the weak encouragement the proposed restrictions would give to less efficient entrants, it would seem that the lion’s share of entrants would continue to be efficient even if the restrictions were adopted. And the restrictions do have serious effects on efficient entrants.

To be sure, the restrictions will not affect the likelihood of entry by a created entrant that is at least as efficient as the incumbent. To the contrary, if we have set our cost measure correctly, then by definition such an entrant could not have been deterred by the prospect that the incumbent might react to entry with an above-cost price cut. For any entrant that is just as or more efficient as the incumbent could profitably respond by matching or beating any above-cost price cut the incumbent makes.

1. Post-Entry Effects. – The restrictions will all limit the post-entry competition that otherwise would have occurred between incumbents and efficient entrants. As in the case of less efficient entrants, here too the price floors will, where they have bite, prevent the incumbent from adopting above cost price cuts that lower prices as much as they otherwise would have. Likewise, the restrictions will give efficient entrants incentives to price no lower than the incumbent’s price floor, and perhaps even to begin with a higher price until they can test where that price floor is, even when pricing down to their own costs would have produced a lower price. Consumers who buy

---

227 See infra at IV.D.
228 See Posner, The Social Costs of Monopoly and Regulation, in TOWARD A THEORY OF THE RENT-SEEKING SOCIETY 71-80 (eds. Buchanan, Tollison & Tullock) (producer’s monopoly rents will tend to be dissipated by costly competition over which producer gets those rents unless that competition has socially valuable byproducts).
229 See supra at IV.A., infra at IV.C.
230 See supra at II. Even if the reader does not agree with my particular cost measure, the conclusions here follow under whatever definition of costs the reader does believe suffices to meet this condition.
from either the incumbent or the entrant will thus pay higher above-cost prices than they would have paid without the floor on incumbent post-entry above-cost pricing. This will harm both consumer welfare and allocative efficiency. The restrictions can also lower incumbent productive efficiency.

Indeed, for efficient entrants, the effects are even more likely to be harmful, for three reasons. First, because more efficient entrants have lower costs, it is more likely they would have otherwise set a price further below this price umbrella. Second, their lower costs mean the prices they otherwise would have set would have been lower. Third, for efficient entrants, these negative offsets are not possibly offset by encouraging additional entry. Instead, the effects are unambiguously negative.

2. Ex Ante Effects on Creation of More Efficient Entrants. -- While the proposed restrictions would have no positive ex ante effects on entry by efficient entrants, that does not end the ex ante analysis. Rather, we need to take it one further step ex ante, to consider what effects such restrictions have on ex ante incentives to create these more efficient entrants. Entrants who are more efficient than incumbents are not magically generated. They require creative effort and capital investments. Both are scarce. We thus need to inquire into the likely effect the proposed restrictions would have on whether this scarce effort and capital will be allocated to these or other forms of entrants.

To the extent proponents are right that these restrictions do encourage entry, it will be by less efficient entrants. Since effort and capital is scarce, this increased entry by less efficient entrants must divert effort or capital that otherwise would have otherwise gone to the more efficient entrant. Of course if investors knew one entrant was less efficient and the other was more efficient, they would all choose the latter. But in fact there will often be a probabilistic judgment, where a new firm has, say, 50% odds of being more efficient and 50% odds of not being more efficient. The proposed restrictions effectively reduce the difference in returns between less efficient and more efficient entrants, and thus at the margins induce more investment in less efficient entrants as compared to others that might be more efficient. The effect will be to decrease the creation of more efficient entrants.

True, any decline in entry by more efficient firms caused by the diversion of effort or capital to less efficient entrant will probably be marginal since, if the returns to entry are increased, increased effort and capital should flow to all entrants from other areas of the economy. But an additional factor means the restrictions would actually decrease the returns to more efficient entrants and further discourage the creation of efficient entrants. Creating an entrant to challenge an incumbent is always risky, and thus a major motive for making such a risky investments will often be the prospect of some supracompetitive profits if the entry is successful. In particular, investors often invest to create a more efficient entrant based partly on the prospect that, if the entrant truly is more efficient than the incumbent, it can displace that incumbent and become the new monopolist (with lower costs or better quality) and reap supracompetitive profits itself. But to the extent the restrictions do protect and encourage more entry by less efficient entrants, they will, as proponents stress, reduce the profitability of firms who enjoy monopoly profits as a result of their greater efficiency. This effect will reduce the potential upside of making an investment that succeeds in

---

231 See supra at IV.A.
232 See infra at IV.D.
creating a more efficient entrant, and thus will lessen the incentives to make risky investments that are necessary to create more efficient firms at all. This effective reduction in the rewards for improving market efficiency will naturally lead to fewer such improvements, resulting in a loss of productive efficiency and fewer more efficient entrants.

Consider the inventor who is deciding whether to devote her time to research that has a 50% chance of resulting in a more desirable or efficient product, and a 50% chance of coming up empty. Or consider the venture capitalist who is deciding whether to make an investment in a new technology that has a 50% chance of being preferred by buyers to the incumbent product, but a 50% chance of flopping. In either case, whether the inventor or venture capitalist makes the necessary investment of time and money will depend on how great the returns are if the product does turn out to be better or cheaper. If the returns of a successful product are higher, they are more likely to make investments that lead to more efficient entrants. If the returns are lower, they are less likely.

In short, to the extent the proposed restrictions succeed in their goal of encouraging less efficient entry and inducing limit pricing on firms that acquire market power, they will lessen the creation of more efficient entrants by diverting some effort and capital and lessening the return on successfully creating a more efficient entrant. This reduced creation of efficient entrants will cause unambiguous harm to consumer welfare, allocative efficiency, and productive efficiency since entry by efficient entrants not only undercuts monopoly prices but can actually lower costs or improve product quality. Further, these harms will be permanent and long term whenever a more efficient entrant is discouraged, as opposed to the possible (mixed) benefits when a less efficient is encouraged, which can only last for the short term before the restriction expires.

Proponents of restrictions on reactive above-cost price cuts ignored these *ex ante* effects on the creation of more efficient entrants. They tend to instead assume entrants either have an inherent inefficiency disadvantage, or one that just depends on where their output is located on a cost curve equally available to entrant and incumbent. The effect of this is to assume away competition in making the sorts of innovations and investments that can lower cost curves and raise demand curves. Thus, though these models pride themselves on taking dynamic account of strategic intertemporal considerations, and do improve on prior static models in that regard, they end up being very static in their assumptions about where the cost and demand curves lie, and to ignore the dynamic possibility those curves might be changed by innovation or investment. If one instead takes those dynamic effects into account, the effects of the restrictions become even more negative.

3. The Restrictions Cannot Reasonably Be Construed or Modified to Eliminate These Effects on Efficient Entrants. – Although the other restrictions on their face apply regardless of the efficiency of the entrant, one might think Edlin has avoided adverse effects on efficient entrants by providing that his ban only applies in cases where the “incumbent monopoly enjoys significant advantages over potential entrants.” This sounds like it excludes any protection for more efficient entrants, and perhaps even for entrants whose efficiency disadvantage is small enough to make it plausible they will overcome it. But Edlin latter disavows any such limitation, arguing for a ban on

---

235 Edlin, * supra* note , at 945.
reactive price-cuts that applies to any incumbent monopoly.236

Still, one might be tempted to modify any of the restrictions on reactive above-cost price cuts by defining them to exclude cases where entrants are not initially less efficient. But such modifications would face numerous difficulties.

First, neither regulators nor antitrust litigation seem likely to accurately gauge when an entrant is less efficient than an incumbent. A cost-based predation test allows market pricing and competition to naturally sort out the efficient entrants from the inefficient ones. But if regulators or antitrust litigation were to apply a cost-based test to efficient entrants and an above-cost price floor for inefficient entrants, then they would have to make freestanding assessments of the efficiency of an entrant. This will be a difficult assessment to make, especially since entrants will have incentives to pretend to be less efficient than they really are in order to get the benefit of a price umbrella. To the extent regulators or litigation erroneously conclude entrants are less efficient when they are not, or firms predict they will err, the effects will be unambiguously adverse.

Second, any modification that resulted in a rule whose substance differed depending on whether a regulator or antitrust litigation would conclude the entrant was less efficient or not would not satisfy fundamental rule of law norms of providing notice to incumbents about how to conform their behavior to legal dictates. A cost-based test may be complex but provides some notice: the incumbent has access to information about its own costs and prices, and by considering them can conform its behavior to the law. But a rule that provided the cost-based test did not apply when the entrant was less efficient would make the substantive rule turn on information about the entrant that the incumbent may not know. Indeed, it may well be that it is only by making above-cost price cuts that the incumbent can reveal whether or not the entrant is less efficient or not. But once it has made such price cuts, it may discover from the market effect on the entrant that its price cut was illegal. Not only will this violate rule of law norms, it will lead risk averse incumbents to avoid above-cost price cuts whenever the relative efficiency of the entrant seems at all ambiguous.

Third, even if an exception for efficient entrants could be applied with perfect accuracy and predictability, this would not eliminate – and indeed would exacerbate – the adverse effect of the restrictions on the creation of efficient entrants. It would not eliminate this adverse effect because it flows from the application of the restrictions to less efficient entrants, which at the margin diverts some effort and capital away from the creation of more efficient entrants and reduces the returns to creating a more efficient entrant. It would instead exacerbate this adverse effect because it would give less efficient entrants an extra return from a short term price umbrella that is unavailable to more efficient entrants, thus increasing the tendency of the restriction to divert effort and capital from more efficient entrants to less efficient entrants. Indeed, entrants might even have incentives to at least temporarily lower their efficiency to try to gain the advantage of such a price umbrella. This would only worsen the effects of the restriction.

Fourth, any such exception could not exclude the case of the entrant who is initially less efficient but becomes more efficient over time. Indeed, such entrants are the best hope of such a restriction. For such entrants, the effects of the restriction on their pricing behavior will be unambiguously adverse once they become at least as efficient as the incumbent. And it will be especially difficult to distinguish them from entrants who are more efficient from the get-go.

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>236</td>
<td>Id. at 967-68.</td>
</tr>
</tbody>
</table>
C. Effects For Entrants Who Can Overcome Their Initial Efficiency Disadvantage

Although the proposals to restrict reactive above-cost price cuts have mainly been based on the premise that the entrant has an insurmountable efficiency disadvantage, they have also sometimes cited the hope that over time the entrant can overcome this efficiency disadvantage. There are two reasons this might happen: the efficiency of the entrant might increase, or the efficiency of the incumbent might deteriorate. Those advocating the restrictions have emphasized the former. And it has some basis. There might be economies of scale or scope at low output that are only available over time as production is ramped up. Or experience in the industry might lower costs or improve quality. But, as noted above, there are also various reasons incumbent efficiency might deteriorate when faced with a less efficient entrant under the proposed restrictions.238 We must thus consider both reasons why an entrant might with time be able to overcome the incumbent’s efficiency advantage.

1. When Overcoming Incumbent Efficiency Advantage Necessitates Some Deterioration in Incumbent Efficiency. One possibility is that any increased entrant efficiency does not alone suffice to overcome the initial efficiency disadvantage, but that the combination of any increased entrant efficiency with the deterioration in incumbent efficiency caused by the restriction does suffice. Because in these cases the degradation of incumbent efficiency was necessary to overcome the initial efficiency advantage, the final efficiency of both the entrant and incumbent must be less than the initial efficiency of the incumbent.239

Such entry will indeed be encouraged by the restriction, for without the restriction the entrants never would have been able to compete effectively with the incumbents. The incumbent would just have lowered its post-entry price to an above-cost level that enabled it to maintain output and fend off any efficiency degradation, while still undercutting the entrant and driving it out of the market.

But the consequences encouraging such entry are likely to be undesirable. It effectively changes an efficient monopoly market into an inefficient market with one or more firms. To be sure, if the deterioration in efficiency left the incumbent roughly equivalent to the entrant, a firm with the same name as the incumbent would remain in the market. But functionally the more efficient version of the incumbent would be eliminated. What would remain would be a less efficient version functionally indistinguishable from the other less efficient entrants.

It is highly unlikely that it is socially desirable to convert a market with an efficient monopolist into a competitive market full of less efficient firms. The reasons are threefold. First, productive efficiency generally matters much more than allocative efficiency. Even in static models, the efficiency gains from a small cost reduction usually offset the efficiency loss from a large price increase.240 The basic reason is that the cost reduction creates efficiency gains for all output,
whereas the price increase produces an efficiency loss only for the marginal reduction in output. True, it is a disputed issue whether antitrust law does (or should) protect just consumer surplus or total efficiency (measured by the sum of consumer and producer surplus). Judge Bork’s argument for the latter was roundly critiqued as based on the premise that monopolists are owned by shareholders who are consumers too. But Bork’s proposition seems more distributionally attractive now that most workers are invested in stocks through their pension plans. More persuasively, one might add that the per capita income of any nation must in the end rest on its productivity. More productive efficiency thus generally means higher wages for workers. Accordingly, increases in productive efficiency benefit consumers both as employees and investors, making it more likely that consumers will be better off when the productive efficiency gain outweighs the loss in consumer surplus. The odds increase even further when one takes into account that any increased productive efficiency will also increase tax receipts that benefit the general citizenry. Indeed, some argue that taxes can generally achieve any redistributive aim better than substantive law, and that therefore substantive law should focus solely on wealth-maximizing efficiency and leave the redistribution to taxation.

Second, increased productive efficiency may eliminate any harm to consumer welfare because lower costs tend to offset any tendency of monopolies to increase prices. That might be one reason the evidence turns out to be quite disputed about the degree to which high market shares even produce higher prices. Some conclude that the degree to which market shares fluctuate influences market performance far more than the size of market shares. Professor Schmalensee’s review of the literature concludes that while the “relation, if any, between seller concentration and profitability is weak statistically” in studies comparing the concentrations in different industries, “[i]n cross-section comparisons involving markets in the same industry, seller concentration is

242 Bork, supra note , at 110.
244 The monopolist price will reflect a markup over cost that depends on demand elasticity. See, e.g., Pindyck & Rubinfeld, Microeconomics 339 (1989). Thus, any reduction in cost reduces the difference between the monopoly and competitive price. If the monopoly has sufficiently lower costs, the monopoly price will be less than the competitive price. See, e.g., 1992 Horizontal Merger Guidelines, 57 Fed. Reg. 41552, §4 (merger that creates market power has defense if it creates increased efficiencies that fully offset the tendency of the market power to increase prices).
positively related to the level of price.**247** Since efficiencies are more likely to differ between industries than within the same industry for a firm operating in different geographic markets, this observation is consistent with the conclusion that concentration earned by greater efficiency does not increase prices, but concentration produced by other (nonmerit) factors does. Since here the initial incumbent is (by hypothesis) more efficient, there is little reason to think its replacement with less efficient firms would benefit buyers with lower prices even in the short run.

Third, if one moves away from static models to dynamic ones, it is clear that in the long run the pace of innovation advances consumer welfare far more than maintaining allocative efficiency.**248** Indeed, has generally been shown that nations with better market performance generally compete by innovation and differentiation rather than by price and imitation.**249** Schumpeter goes even further to argue that firms with higher market power are more likely to innovate because they can reap a larger share of the benefits of their innovation, whereas if there were perfect competition no one would have the incentives to invest in product improvements.**250** But we need not rely here on any controversial proposition that monopolists are generally more innovative than competitive markets. It is enough here (given hypotheses) to simply assume that more efficient firms are more innovative than less efficient ones.

In sum, when entrants can overcome their initial efficiency disadvantage only if the restrictions somewhat lessen the incumbent’s efficiency, then the effect on prices and thus consumer welfare are ambiguous, but the effects on productive efficiency are clearly negative.

2. When Increased Entrant Efficiency Suffices to Overcome Incumbent Efficiency Advantage. -- The other possibility is that entrant efficiencies alone will increase sufficiently with time to overcome its initial efficiency disadvantage before the restriction on reactive price cuts expires. This can include cases where incumbent efficiency declines, as long as the final efficiency of the entrant exceeds or equals the initial efficiency of the incumbent. This might be true when there are economies of scale the entrant can only access over time, and the minimum efficient scale is less than half the potential market output. It might also happen when the increased entrant


**250** Schumpeter, supra note , at 87-92, 99-106. Professors Areeda and Kaplow have disputed this hypothesis with evidence that firms with market power do not obtain more patents or spend more on research and development. Areeda & Kaplow, supra, at 31-33. But this misapprehends Schumpeter’s point, which was that innovation includes not just technological progress but changes in organization, distribution, or scale that are not protected by patents and would thus go unrewarded without some degree of market power. Schumpeter, supra, at 84-85, 88-89. The huge investments necessary to create hub-and-spoke airline systems would be just such an example. See infra III.C. Indeed, properly understood, Schumpeter’s theory would predict firms that lack market power would have greater incentives to shift their innovation investments toward research and development designed to obtain patents because that is the only form of innovation for which they can exclude competition and obtain rewards.
efficiencies come from experience and learning by doing, which need not come at the expense of incumbent efficiency. But such entrants do not need encouragement from a restriction on reactive above-cost price, and thus the effects of a restriction in their case are entirely undesirable.

(a) Why Such Entrants Would Generally Enter Without Any Restriction on Reactive Above Cost Price Cuts. – If it is possible to ascertain when increased entrant efficiency alone will allow it to overcome the incumbent’s initial efficiency advantages, then such entrants should be able to persuade capital markets to lend it enough money to get established without the protection of any restriction on reactive above-cost price cuts. True, the initially less efficient entrant will suffer start-up losses if the incumbent’s above-cost price is below the entrant’s initial costs. This can force the entrant to initially charge a below-cost price to remain in the market, which is one more reason to allow entrants to charge promotional prices. But this initial need for a fund to cover start-up losses will simply be one of the many capital costs of entry that must be considered and that any entrant would anticipate. When the initial inefficiency results from inexperience, the investment will effectively be in human capital, the cost of which requires funding the losses necessary to get that experience. But there is no reason to treat investments in the human capital necessary to successfully enter a market any differently from investments in the physical capital necessary for successful entry. Nor is this entry cost an artificial one since it reflects a real societal loss of efficiency from shifting production in initial stages to a less efficient firm. If the entrant cannot earn a sufficient return to cover this entry cost, there is no more reason to think its entry desirable than it would be for an entrant that cannot cover the capital cost of building a plant. Thus, if entry by an initially less efficient firm is itself efficient and desirable, the capital markets should be willing to provide the necessary capital to cover start-up losses, just like they cover other capitalized entry costs.

One might think the capital markets would not cover these start-up costs because the long term result will be competition between the entrant and incumbent with both pricing at long run costs. But here cost has the economic definition that includes a normal rate of return on capital investment (including human capital), and if entry is efficient, that normal rate of return should at a minimum suffice to recoup this and other entry costs. Indeed, as soon as it realizes the entrant cannot be driven out, the incumbent monopolist will have incentives to accommodate entry by pricing at supracompetitive duopoly levels, which should more than suffice to cover the entrant’s capital investment of bearing the initial inefficiency loss. Accordingly, once the initially less efficient entrant raises the initial capital to cover initial inefficiency losses, that itself should assure the incumbent’s reactive pricing will eventually be high enough that those initial losses will at least be recouped and may even be immediately high enough that those initial losses are never even incurred. If the entrant anticipates eventually becoming more efficient than the incumbent, then

251 See infra at IV.C.3.

252 Below-cost incumbent pricing is a different story because it might mislead prospective entrants or capital markets into thinking incumbent efficiencies are greater (or market conditions are worse) than they actually are. See Brodley, Bolton & Riordan, supra note , at 2247-49, 2285-2330 (synthesizing recent literature).

253 See supra at II.E.

254 They will be immediately that high when the incumbent shares the belief of the capital markets that the entrant will eventually be as efficient, and the incumbent will have incentives to be as accurate as it can in such predictions since if the entrant will eventually be as efficient, immediately higher prices will maximize the incumbent’s
it will even be able to drive out the incumbent and reap its own monopoly profits, thus amply covering these start-up entry costs.

Another concern might be the general concern about any sunk entry cost – that the threat of the incumbent pricing at its variable costs will suffice to deter entry by an equally efficient entrant. But since this is a general problem with any sunk entry costs, there is no reason to adopt a special doctrine to deal with sunk entry costs that happen to take the form of initial inefficiency losses due to inexperience. Instead, a more general doctrine must be developed to deal with this issue. For reasons analyzed above, it turns out that an incumbent threat to price at whatever costs are variable to it during any pricing period will not suffice to deter an equally efficient entrant because once the entry occurs such pricing cannot drive out the entrant and would thus be utterly irrational. Even if one did not accept this reasoning, the solution would not be to replace a cost-based test with a restriction on above-cost price cuts. Instead the solution would be to simply define one’s cost measure to include the magnitude of the predator’s cost for the sorts of sunk entry costs that are variable to the entrant when it decides whether to enter. The start up sunk costs in human or physical capital necessary to achieve equal efficiency with the incumbent would be included in the sort of costs variable to the entrant. But the magnitude of those costs to the incumbent must be determined in a future-oriented way. And since these are start-up losses, they are by definition non-recurring and thus the incumbent will not face these costs in the future. That is, incurring start up losses to replace the incumbent’s output with the entrants involves a real efficiency loss if the remainder of their future costs is really identical. Unless the entrant can cover those costs from market returns, then its entry will not really be efficient.

Thus, entrants who in the long run will be just as efficient as the incumbent should enter without any restriction on reactive above-cost price cuts. The only reason to expect any difference would be if courts are somehow better than firms and capital markets at identifying entrants who have this characteristic, which is surely implausible. Not only do capital markets have far more expertise on this matter, they have a lot more incentive to make correct decisions. Indeed, whether or not they on average are better at identifying good entrants, the market will drive firms who prove

\[255\] See supra at II.E. If the incumbent is a monopolist in multiple markets, it could conceivably be rational for it to respond to entry in the first market by permanently offering a price that does not allow the entrant to cover the entry costs of initial inefficiency losses, in order to deter future entry in the other markets. But this raises a disputed issue about whether cost measures should cover entry costs to prevent the deterrence of equally efficient entrants in such multi-market situations, a general issue applicable to all entry costs and not limited to entry costs that take the form of these initial inefficiency losses. See id. (analyzing the issue). If this issue were resolved in favor of fears of deterrence, one could use a measure of costs that included (as one of the recoupable entry costs) the startup losses from initial inefficiencies that are equally applicable to all firms (including the incumbent). Condemning as predatory only prices below such costs would prevent deterrence of these initially inefficient entrants without imposing a price umbrella that has all the other ill-effects for these and other entrants.

\[256\] See supra at II.D.

\[257\] Id.

\[258\] If one also rejected this future-oriented conclusion, the solution would still not be to restrict above-cost price cuts. It would instead be to define the cost measure to include the amortized cost of the sorts of sunk entry costs that are variable to the entrant when it decides whether to enter. That measure would then include any start up sunk costs in human or physical capital necessary to achieve equal efficiency with the incumbent.
to be bad at making this identification out of the market, leaving only the firms who do better. Williamson is apparently of the view that the capital markets might wrongly fail to provide funds because it is too costly for entrants to disclose their actual state of competitiveness persuasively to potential investors. But that information cost is a real societal cost of entry, and absent more precise information the capital markets should rely on the average competitiveness of such an entrant, which there is no reason to think they cannot gauge as accurately as the courts. His rule (and the other restrictions) would effectively protect all entrants without incurring the cost of becoming any more informed. This will induce the entry of some firms that prove to be competitive, but will also induce the entry of many firms that are not, and on average will induce more of the latter entry than the former in any case where capital markets were not willing to make the investment given the average competitiveness of the class of entrants.

To put it another way, one could accurately characterize the various restrictions on reactive above-cost price cuts as mandatory consumer financing of the new entrant. Instead of having the financing provided by capital markets, the financing is provided by consumers in the form of higher post-entry prices. And instead of having the financing decision made voluntarily by experts on capital markets, it would be made involuntarily based on a regulatory or litigation assessment of the particular entrant, or a mistaken blanket rule that includes all entrants. Indeed, the Edlin and Williamson proposals include a 12-18 month limit only as a rule specification of the more general standard that the period of price restriction should last long enough to allow the entrant enough “sufficient time to recover its entry costs and become viable.” But the persons from whom the entrant is “recovering” its entry costs will be the consumers who are paying higher post-entry prices than they otherwise would have. And unless there is a (mistaken) global judgment that all entrants can do so, the person making the judgment whether the entrant will become viable (i.e., efficient in the long run) will be the regulator or antitrust judge or jury. There is no reason to think it desirable to have such government-ordered consumer financing of entrants that cannot get financing on capital markets.

And if there were good reasons to think capital markets were so imperfect that mandatory consumer financing were desirable, there would be no reason to limit that proposition to the particular set of cases where entrants face incumbents with market power who are likely to drive them out with reactive above-cost price cuts. The proposition would justify protecting all entrants with government subsidization, tariffs, or post-entry price floors and output ceilings. If such infant industry arguments are not persuasive generally, there is no greater reason to find them persuasive here.

In short, any entrant who is likely to experience a sufficient efficiency improvement to overcome an initial efficiency disadvantage will likely get the financing to enter without any restriction and thus cannot have its entry encouraged by the restriction. The restriction is likely to encourage entry only in cases where the government and capital markets diverge in their prediction of whether a entrant’s efficiency will rise enough to overcome its initial inefficiency. And the most likely reason for such divergence is that the government has erroneously overestimated the ability of the particular entrant’s efficiency to rise or erroneously overincluded all entrants. Thus the

restriction is more likely to encourage entry by firms that in fact will never overcome the efficiency disadvantage (which is undesirable) than to encourage entry by firms who will.

Further, even in such cases, the encouragement to entry will be weak. This is because the capital markets by hypothesis will regard the entrant as permanently less efficient and thus unlikely to survive in the market in the long run. Accordingly, the restriction would only cause the capital markets to fund the entrant in the rare case where the anticipated additional profits during the relatively short period of any restriction on reactive above-cost price cuts provides the marginal difference necessary to overcome capital entry costs.261

(b) The Undesirable Consequences.-- In short, if capital markets are reasonably efficient, entrants who will with time become as efficient as the incumbent should enter even without any restriction. The effect of a restriction on such entrants will thus be adverse. During whatever initial period the entrant remains less efficient than the incumbent, the effects will be much the same as those described above for less efficient entrants who would enter without any restriction.262 Consumers who purchase from either the incumbent or entrant will pay higher prices. Where the restrictions have bite, increased production will be shifted to a less efficient producer and the incumbent will suffer a decreased output that lowers its own efficiency. Thus, both consumer welfare and productive efficiency will suffer. After the entrant becomes just as (or more) efficient as the incumbent, the effects will be those described for the application of the restrictions to efficient entrants.263 Consumers will pay higher prices, reducing consumer welfare and producing a lower output harmful to allocative efficiency.

3. Entrants That Share the Incumbent’s Declining Cost Curve. One important case to consider is the one where entrants have the same cost curve as the incumbent, but the curve is a declining one so that costs are higher at low firm outputs than at high firm outputs. Not only is the case a recurring one, but it forms the centerpiece of Williamson’s famous model, which merits special attention because it purports to prove that a rule prohibiting output expansions in reaction to entry will always have favorable welfare effects. In particular, Williamson concludes that his output limitation rule has no effect on post-entry price or output when the entrant’s efficiency would (with increased output) increase to match the incumbent’s.264 Rather, he concludes the only effect of his rule will be to lower post-entry incumbent costs because his output ceiling bars the incumbent from reacting to entry by exceeding its optimal plant output.265

But his model depends on various questionable assumptions. Williamson reaches the conclusion post-entry prices and outputs will be unchanged because he assumes that – no matter

261 See generally supra at IV.A.2 (explaining why restrictions only provide weak encouragement to less efficient entrants).
262 See supra at IV.A.1.
263 See supra at IV.B.
264 See Williamson, Predatory Pricing, supra note , at 309-10.
265 Any increase or decrease in incumbent output necessarily increases short run incumbent costs on Williamson’s reasonable assumption that incumbent plant size was set to minimize the short run costs of making the pre-entry output. See id. at __. Thus, if current law allows an incumbent to increase short run output in response to entry, it necessarily increases incumbent short run costs compared to the pre-entry period. But current law only increases firm costs compared to the Williamson rule on his further assumptions that incumbent output will be unchanged under his rule, and that entrant output is the same under any rule. Those assumptions are dubious for reasons noted in text.

-76-
what the rule -- the incumbent will do the same thing post-entry: produce the level of output that, given an assumed categorical consumer preference for the incumbent, leaves an entrant selling at the same price with a low residual output where it has high costs and cannot earn profits.266 His assumptions about incumbent behavior depends heavily on his premises that incumbents have perfect knowledge about the cost curves of potential entrants, that all entrants have identical cost curves, and that the incumbent does not care about pre-entry profits at all and thus picks whatever pre-entry output level minimizes post-entry hazards.267 Since those assumptions in fact are not true, the incumbent’s actual pre-entry output will reflect average expectations and profit tradeoffs, and thus an output limitation rule will sometimes set an effective price floor that prevents decreases in price and increases in output.

More important, Williamson’s conclusions depend on the critical assumption that, if the entrant and incumbent have identical prices, the incumbent will be able to sell all its output first, leaving the entrant with only the residual demand.268 This is the necessary premise for his conclusion that, even if the entire cost-output curve is immediately available to the entrant, the incumbent will nonetheless (under any rule) be able to set an output that leaves the entrant at the high cost portion of the curve.269 That is, if we refer to his graph, reproduced as Figure 3, this assumption is what allows him to conclude that the incumbent will choose a price $P_T$ at which the incumbent will sell all its initial output, $Q_O$, leaving the entrant with only the residual market output $Q_T$, and thus higher costs.270

But if, as Williamson assumes, the full cost curves were really equally available to the entrant, one could have equally adopted the opposite assumption that the entrant sells all the output it can at an equal price, leaving the incumbent with the residual demand and thus at the low-output, high-cost portion of the curve. That is, Williamson provides no reason to think that at equal price

---

266 See Williamson, Predatory Pricing, supra note , at 294 & 295 n.35, 297-98, 310 n.66, 314.
267 See supra at IV.A..
268 Williamson, Predatory Pricing, supra note , at 294 & 295 n.35, 297-98, 310 n.66.
269 Id. at 295, 297-98, 313.
270 Id. at 297, 310 n.66.
P_T the entrant would not instead produce output Q_o and leave the incumbent at Q_T. After all, dominant firm models typically make such an assumption when they assume the dominant firm faces a residual demand curve determined by subtracting the output of the fringe firms at any given price.\textsuperscript{271}

Indeed, in this context, there are good reasons to make such an assumption because buyers would all have an affirmative interest in making sure the entrant stays in the market, and at an equal price buyers would suffer no individual detriment from dealing with the entrant that might create collective action problems for them.\textsuperscript{272} If long-term contracting is possible, the entrant with the same cost curve should indeed be able to lock up a sufficient share of the market to put it at least at the minimum efficient scale.\textsuperscript{273} But even if long-term contracting is not possible, each buyer on the spot market has an incentive to deal with the entrant at any equal price to keep the competition going. If so, the entrant would also reach the low cost portion of its cost curve and would instead fit the profile of an equally efficient entrant.

Perhaps implicitly Williamson is assuming that the incumbent has a brand name advantage or familiarity that will lead buyers to choose it at the same price. But if that is the case, it means that, according to the buyers’ revealed preferences, the incumbent good is actually more valuable than the entrant’s. Because brand name advantages may not have any concrete manifestation in product quality, they are sometimes dismissed as insubstantial. However, if people are willing to pay more for certain brand names, that means they value the greater predictability and peace of mind that comes with that choice. That’s one reason they prefer to buy at McDonald’s rather than the unknown hamburger joint. We have no warrant for second-guessing what consumers choose to value, and thus no more reason to question their preference for brand names than to question their

\textsuperscript{271} See Carlton & Perloff, supra note , at 113-114.

\textsuperscript{272} Compare supra at IV.A.1 (noting that collective action problems would be raised if the incumbent could offer a lower price than a less efficient entrant).

\textsuperscript{273} Id.
preference for vanilla ice cream over pistachio. The revealed preferences of buyers shows that brand name goods are of higher quality in the only sense that is meaningful on a market: consumers are willing to pay more for it. Thus, if such a brand name advantage exists, then the two firms either have different demand curves or one must adjust their cost curves to take into account the fact that the cost of producing an equally valued product is higher for the entrant. Either way, Williamson’s model would no longer hold. Instead, what we would have is the case of an entrant who is (at least initially) less efficient at every output level.

Or rather than adopting either extreme assumption, one could assume buyers have no categorical preference for either the incumbent or entrant, but would buy from them equally if the price were equal. If that were the case, the entrant could respond to any above-cost incumbent price with a lower entrant price, expanding total market output until half of it put the entrant on the flat portion of the cost curve. That is, if the incumbent tried to drive out the entrant by selling at $P_I$ as Williamson posits, the entrant would at the same price be able to sell half of total market output, or around $Q_*$, which given Williamson’s particular drawing would put the entrant beyond its minimum efficient scale and make entrant sales profitable. If the incumbent tried to respond by undercutting that price, the entrant could keep matching or undercutting the incumbent price all the way down to $P_C$, below which the incumbent could not go without pricing below cost. At that price, the entrant would capture an output of $\frac{1}{2}Q_C$, which by definition will be on the low flat portion of the cost curve for any drawing that describes a market where the minimum efficient scale is below half of total market output at that price.

In a sense, this is a product of how Williamson drew his demand and cost curves, because in his drawing a price equal to the minimum long run cost produces a total market output that is more than double the minimum efficient scale where an individual firm can enjoy that cost minimum. But this is no graphical artifact because if his curves were not drawn that way, then the market would be a natural monopoly because only one firm could stay in the market at the minimum efficient scale. And if the market is a natural monopoly, there can be no successful competition between the entrant and incumbent in the long run. Instead, the situation would be that described above of an initially less efficient entrant that can never become as efficient as the incumbent even though its entry degrades incumbent efficiency and raises entrant efficiency. For any market that does have the sort of demand and cost curves that Williamson posits, an entrant with immediate access to the same declining cost curve as the incumbent is not really an initially less efficient firm at all, but rather an firm that is equally efficient from the beginning, and thus could not be deterred by any incumbent price at or above cost.

Finally, even if one thought customers did have a generic preference for incumbents at the same price, an entrant with the same cost curve as the incumbent could overcome that because, unlike the incumbent, the entrant can offer a promotional below-cost price. The entrant need only make the small additional investment of offering a promotional price slightly below cost, which the incumbent could not match since it is constrained to price at cost. The small price advantage will

---

274 See Williamson, Predatory Pricing, supra note , at 297.
275 See supra at IV.A.
276 AREEDA & HOVENKAMP, supra note , at 447-50.
bring enough sales to the entrant to bring its production to the minimum efficient scale.\textsuperscript{277} This is a powerful justification for allowing entrants to offer promotional prices, but provides no justification for condemning above-cost incumbent prices. Indeed, it confirms the conclusion that cases fitting the Williamson model are (even with his assumption of a categorical consumer preference for incumbent output at the same price) effectively the same as the case of an equally efficient entrant described above.

Thus, if one assumes either that incumbents do not enjoy a categorical consumer preference at an equal price or that any preference can be overcome with promotional pricing, then the growth of an entrant that has the same declining long run cost curve as the incumbent cannot be contained by just lowering incumbent prices to a level that leaves the incumbent above-cost and the entrant on the high-cost part of the curve. And if incumbents cannot set a price that either drives out the entrant or contains its growth, then the incumbent’s incentives will lead it to instead raise post-entry prices in order to maximize short-term profits. This is another reason the Williamson rule would in fact produce an average decline in post-entry output, with corresponding ill-effects that include a likely increase in incumbent costs.

In short, if economies of scale and scope are equally available to both entrant and incumbent from the moment of entry, so that they both have the same declining cost curve, there are two possibilities. If the minimum efficient scale is below half the maximum market output, the case is actually one where the incumbent and entrant are equally efficient from the beginning, and the Williamson rule will have all the adverse effects described for such entrants.\textsuperscript{278} If the minimum efficient scale is higher than half the maximum market output, we have a natural monopoly, with no possibility of long term competition. The entrant efficiency will increase with its increasing output, but never to the level of the incumbent. The case will thus have all the adverse effects described for a less efficient entrant, with the additional ones that flow from the deteriorating incumbent efficiency.\textsuperscript{279}

\textsuperscript{277} Using Williamson’s model, the entrant would offer a price of $P_C - \epsilon$, where $\epsilon$ is whatever small discount is necessary to overcome consumer inertia to choose an entrant product over an equally valuable incumbent product. Williamson, \textit{Predatory Pricing}, supra note, at 297. Given how Williamson draws his model, a one penny discount would suffice. At a promotional price, the entrant could sell all the output it wanted. But presumably the entrant would stop once it got to an output above the minimum efficient scale since it loses some (albeit small) amount on any sales past that point, and would no longer be able to offer a promotional price if its output got so large that it would be deemed to have enough market power to make the ban on below-cost predatory pricing apply to it. Areeda & Hovenkamp, \textit{supra} note, at 449-50. Thus, once the promotional price has brought the entrant to the minimum efficient scale, the entrant will raise prices to cost and both it and the incumbent will be competing with the same costs in the same market.

\textsuperscript{278} See supra at IV.B.

\textsuperscript{279} See supra at IV.A. A similar analysis applies if both the entrant and incumbent have economies of scale available from the moment of entry, but their cost curves differ so that at high output one has lower costs than the other. If it is the entrant that has lower costs at high output, it has no need of protection from a ban on above-cost predatory pricing. Without any such ban, the entrant could have entered at a price below the lowest cost of the incumbent, and taken over all market output. All the ban can do is raise incumbent prices in the meantime, and perhaps entrant prices too. The long run effect will be the unchanged -- an entrant monopoly -- because this is the case of a more efficient entrant. If it is the incumbent that has lower costs at high output, protecting the entrant cannot help in the long run. Even though the entrant’s efficiency increases with its growing output, it will not increase to a level that matches incumbent efficiency. Whenever the restriction expires, the incumbent will just lower its price to match its lower cost at high output, drive out the less efficient entrant and take over the market. In the short run, there will be all the adverse effects
Alternatively, one might assume that the entrant can only access the low cost portion of his cost curve over time, perhaps because the entrant needs time to ramp up his capacity or engage in learning by doing. Although they do not actually model that case, Williamson and Edlin express such a view. If so, then we do not have the case of an entrant who is initially just as efficient as the incumbent. Rather, the transfer of output to the entrant will be inefficient in the short run, and the case is actually one where entrant efficiency improves with passage time rather than just output. In that sort of case, start up costs have to be incurred to gain the human capital (experience) necessary to achieve the lower cost curve, and the effects will be as described in the prior two sections.

D. Ex Ante Effects on Incumbent Incentives

The proposed restrictions on reactive above-cost price-cuts do more than affect the likelihood of entry and the nature of post-entry competition. They also affect incumbent behavior pre-entry. Proponents have stressed the argument that the restriction’s protection of entry by less efficient firms will force incumbent monopolists to lower everyday prices from a monopoly price to a limit price that is just low enough to keep out less efficient entrants. But while the restrictions may weakly encourage somewhat lower pre-entry prices, it is doubtful they will generally induce such incumbent limit pricing or that such a regime of enforced limit pricing is legally consistent with the argument for banning reactive above-cost price cuts. Further, proponents have ignored the other effect on pre-entry incumbent behavior: namely that the restrictions reduce the incentives to create products that are so socially valuable that they make incumbents more efficient and earn them monopoly power. Such incentives will be reduced not only to the extent that the restrictions do induce lower pre-entry incumbent prices, but also because the restrictions will lower incumbent profits in the event of entry.

1. The Likelihood and Legality of Encouraging Limit Pricing

The conclusion that a restriction on reactive price cuts will lead to limit pricing (or a parallel increase in pre-entry output) depends on the premise that incumbents will want to limit price in order to bar entry by less efficient firms. But in fact, the claim that the restrictions will generally induce incumbent limit pricing that otherwise would not have occurred is dubious for several reasons.

First, not all prospective entrants will be less efficient. To the extent incumbents anticipate that some new entrants will be as efficient as the incumbent (or more), those entrants are likely to enter no matter what above-cost price the incumbent sets. This is also true for initially less efficient entrants who can raise the capital costs of gaining the experience to overcome their initial inefficiency. To try to set a limit price or output to exclude efficient entrant would thus effectively mean pricing down to costs (or below). It would make no sense for incumbents to sacrifice all current monopoly profits to reduce the risk that such entrants might deprive them of monopoly profits in the future. Given the weak encouragement the restrictions provide to less efficient entrants, the lion’s share of entrants will not be less efficient and thus incumbents will have little

280 Williamson, Predatory Pricing, supra note , at 296, 298 n.43, 303-04, 313; Edlin, supra note , at 975 & n.95, 977.

281 See supra at IV.C.1-2.

282 Edlin, supra note , at 946-47, 973-78; Williamson, Predatory Pricing, supra note , at 308.
incentive to engage in pre-entry limit pricing.

Second, even if we restrict our attention to less efficient entrants, the restrictions are unlikely to significantly increase the likelihood that incumbents would adopt limit pricing. Incumbents contemplating limit pricing must calculate a tradeoff between lowering their pre-entry profits and decreasing the risk that entry will lower their post-entry profits. Williamson assumed the latter would always govern but admitted that was based on an “arbitrary assumption” that incumbents strictly prefer avoiding post-entry hazards to earning pre-entry profits. In fact, the preference is likely to run strongly in the other direction.

In part this is because the pre-entry profits are earned in the present with certainty, and thus should not have the time and uncertainty discounts a firm would rationally apply to any risk of a decline in post-entry profits. Present value calculations can make the discounted value of any future loss of income from entry relatively small. Further, in a dynamic model incumbents would not assume that today’s cost and demand curves and entrant characteristics will prevail tomorrow. The market may be entirely changed by Schumpeterian competition, increases in entrant efficiency, decreases in barriers to entry, changes in consumer preferences, or sudden cost shifts. This uncertainty makes it rational to further discount any future profits that might be gained by deterring entry.

More important, though, is the low degree and magnitude of the additional risk of entry created by the restrictions on above-cost price cuts. Incumbents will come to realize that less efficient entrants will be rare because their entry is futile in the long run. Further, incumbents will realize that if less efficient firms do enter, the incumbent can (even with the restriction) drive them out with some relatively minor time delay. It is highly unlikely it would be rational for the incumbent to sacrifice everyday high pre-entry profits to avoid this low additional risk of a brief interruption in those profits. That would require the incumbent to permanently forego present certain monopoly profits on all its sales in order to produce a small reduction in the uncertain risk that future entry will make the incumbent temporarily forego a fraction of its sales. It would almost surely be more rational for the incumbent to fatten up on pre-entry monopoly profits, which not only maximizes its expected wealth but also assures itself enough reserves to deal with the wasteful losses from mothballing capacity that will occur when less-efficient entry happens.

Pre-entry limit pricing would be even less attractive when the rational response to entry under a restriction will be not to try to compete with the less efficient entrant but rather to raise incumbent prices to hasten the time when prices can be reduced to drive out the entrant. In those cases, entry will not pose a risk of even temporary lowered prices, though it will pose a risk of a temporary output decrease.

Still, while any encouragement to lower pre-entry incumbent prices will be weak, it does seem like restrictions protecting less efficient entrants at the margins may encourage created incumbents to charge lower pre-entry prices than they otherwise would have. This is because

---

284 See Areeda & Turner, *supra* note , 87 YALE L.J. at 1343-44.
285 To the extent firms would engage in limit pricing with or without such a restriction, their limiting pricing can hardly be claimed as a benefit of the restriction. It is only any increased likelihood of limiting pricing that matters.
286 See *supra* Part IV.A.
whatever calculation an incumbent makes in deciding whether to engage in limit pricing will include a somewhat larger likelihood of less efficient entry and larger costs when they do enter. Thus, sometimes lower pre-entry incumbent prices should result. Standing alone this will benefit consumer welfare. But, as the next section shows, the restrictions also diminish the incentives to create incumbents with greater efficiency and lower costs, which will tend to increase pre-entry prices. Thus, the effect on pre-entry consumer welfare is mixed.

There is also a legal oddity of the Edlin and Department of Justice position. As noted above, they argue that reactive above-cost pricing is predatory because it fits the *Grinnell* test of being designed to exclude rivals and maintain monopoly power. But that characterization would be equally true of the limit pricing they seek to induce incumbents to make. Setting a limit price has precisely the same effect on entrants and purpose of maintaining monopoly power as a reactive price cut to the same price level.

Indeed, this led earlier courts who were attracted to the proposition that reactive above-cost price cuts could be predatory to the conclusion that limit pricing could also be predatory. This conclusion is surely misguided. We do not want antitrust courts in the business of forcing monopolists to raise their prices. That would amount to a scheme of enforced monopoly pricing. But it does confirm that one cannot properly deduce whether pricing is predatory by simply determining whether it tends to keep rivals out of the market and maintain monopoly power.

The *Grinnell* test thus cannot itself support restricting reactive above-cost price cuts in order to enforce a regime of limit pricing. By the same token, the fact that current law permits limit pricing does not mean that limit pricing is affirmatively desirable or that we would want to force firms to adopt it. The lack of a legal ban merely means that trying to prohibit limit pricing would have undesirable consequences. In fact, trying to affirmatively require limit pricing would likely be undesirable, in part for reasons discussed next.

2. Reduced Incentives to Create Efficient Incumbents. – One must go one more *ex ante* step backward in time to consider the effects these restrictions would have on the incentives to create more efficient incumbents. The very premise that entrants are less efficient presupposes that this more efficient incumbent exists. But more efficient firms do not simply drop from the heavens. Someone had to make the risky investments necessary to create them in the first place. And their incentives to make those risky investments will be lower if the law lowers the rewards for successfully creating a more efficient firm.

The proposed restrictions would lessen the rewards from creating a more efficient incumbent in numerous ways. First, to the extent proponents are correct that the enhanced threat of less efficient entry will induce incumbents to lower their everyday prices to keep out these entrants, then more efficient incumbents will reap lower everyday profits. Second, when a less efficient entrant does enter, the restrictions will prevent incumbents from adopting the above-cost prices that maximize their profits. Where this has bite, it must lower the incumbent’s expected profits and thus its rewards for having creating a more efficient firm. Third, when faced with entrants that are equally efficient (or whose initial inefficiency will be overcome), the Edlin and Williamson restrictions will sometimes prevent monopolists from offering the profit-maximizing price post-
entry, and thus will lower its returns. Fourth, when faced with efficient or inefficient entry, all the restrictions are likely to reduce the productive efficiency of the incumbent. This will also lower the incumbent’s expected profits.

All this will lower the rewards for creating a more efficient incumbent. Faced with those lower returns, firms and investors will necessarily undertake less investment and innovation to try to create the next more efficient incumbent. Thus, the creation of more efficient firms will be reduced. This dynamic reduction in efforts to improve efficiency will result in lower productive efficiency and harm consumer welfare.

One might object that all this amounts to arguing the law should not act to reduce monopoly profits. And so it does – when the monopoly profits are the fruit of having created a more efficient firm through desirable investment and innovation.\textsuperscript{289} We must remember that monopoly power is not itself undesirable. Market power simply means that the firm holding that power has a product so much more desirable or cheaper to provide than rival options, that those other options do not constrain the firm from reducing output in order to raise prices and profits.\textsuperscript{290} And monopoly power just means a “substantial” or “significant” degree of market power,\textsuperscript{291} which merely means the firm has a product that is substantially more desirable or cheaper to provide than rival options. Creating a product that is substantially better or cheaper than rival options is highly desirable since it leaves society far better off than it would have been had the product not been created.

Such monopoly power does not arise out of thin air. Someone had to invest or innovate under conditions of uncertainty to create a substantially better or cheaper product. And their incentives to take risks, invest, and innovate will be greater the larger their profits when they are successful. The ordinary rewards for doing so are the prospect of monopoly profits. We thus must be careful not to act as if the purpose of antitrust laws was to eliminate monopoly profits themselves. Such profits are an extremely valuable inducement to the creation of better or cheaper products.

This problem is particularly serious in high technology markets, where such investments and innovation have the promise of not only creating something so valuable that it confers market power over pre-existing rival options, but may even generate a new market by creating a product much more desirable than pre-existing market options. But the adverse effect on ex ante incentives is not limited to high technology markets. It also exists whenever a firm has to decide whether to make investments in some old technology that will create a new facility that buyers will consider irreplaceable because of standard stuff like transportation costs, or that will create market power because it satisfies a market niche that was previously unrecognized. Investments in changes in distributional methods or organizational form, personnel training, or the sheer creation of large scale production methods can also lower costs or improve product quality in ways otherwise unattainable.\textsuperscript{292} In short, monopoly power can be desirably created in many low-tech and high-tech

\textsuperscript{289} Monopoly power can of course also be created in various anticompetitive ways, but if the antitrust laws are operating properly the incumbent monopolies should have achieved their monopolies through desirable means. And if they are not operating properly, then that is what needs to be fixed.


\textsuperscript{291} See Areeda & Kaplow, supra note , at 448; Reazin v. Blue Cross & Blue Shield of Kansas, 899 F.2d 951, 967 (10th Cir. 1990).

\textsuperscript{292} See supra at __.
ways, and both of them will be discouraged if the ability to reap monopoly profits when successful is curtailed. This is true whether the innovation is patented or not, for the various restrictions on reactive price cuts would reduce monopoly profits on innovations whether or not they are manifested in patents.

To use the concrete illustration most important for predatory pricing purposes, consider the various market advantages that Edlin and the Departments describe incumbents as having in the airline industry: frequent daily flights, available connecting flights, economies of scale and scope, and brandname advantages. These are certainly advantages, but it is not as if they are undesirable or unearned. They rather reflect the desirable consequence of the incumbent making the necessary investments to produce a more valuable (or cheaper) product than its rivals. This is clearly true of developing a big enough network of flights to offer frequent and connecting flights and take advantage of economies of scale and scope. It is even true for the market advantage that attends having created more recognizable brand name, for any consumer willingness to pay more for a brand name product indicates that product is of higher quality as judged by consumers’ reveal preferences.

To be sure, society would be even better off if it could have the more desirable or cheaper product and have it produced at cost. But that is a false choice. Unless given a high rate of return, firms will not invest to create the substantially more desirable or cheaper product. The monopoly power we are tempted to restrain will then never be created, but society will be worse off since it will be relegated to substantially worse or more costly market options. This problem with restrictions on reactive above-cost price cuts is really just a special case of the more general point that regulation (inside and outside antitrust) cannot just take into account the ex post effects that regulation has once a market and market power already exists. Regulation must also take into account any negative effect regulation has on ex ante incentives to invest and innovate to create something so valuable that it confers market power (over pre-existing rival options) and may even generate a new market (by creating a product much more desirable than pre-existing market options).

Limiting monopoly profits might seem desirable in a static model that focuses only on allocative efficiency. But in a dynamic model, such limits on monopoly returns will reduce productive efficiency, innovation and investment, and Schumpeterian competition to acquire temporary monopolies and the associated monopoly profits. Moreover, here much of the

---


294 Other advantages are more suspect: frequent flier programs and overrides paid to travel agents. 140 F. Supp. 2d at 1149. Both of these can be characterized as kickbacks that take advantage of agency problems to induce passengers to take less efficient flights. The frequent flier programs arguably induce individuals to spend more on business travel (the cost of which is billed to someone else or is shared with the government through tax deductions) in return for free personal travel. The travel overrides arguably reward travel agents with larger commissions for advising their clients to take more costly flights. But if either of those characterizations is true, then the proper remedy is not to ban above-cost price cuts but to ban the frequent flier programs and travel agent overrides that put passengers on higher priced flights.

295 See supra at IV.C.3.

296 See generally SCHUMPETER, supra note , at 84-92, 99-106.
reduction in monopoly profits does not result from improved allocative efficiency. Rather, the restrictions reduce monopoly returns in many ways that fail to confer such allocative efficiency.

The above concerns have tended to be missed by those advocating bans on above-cost predatory pricing because they adopt static assumptions about demand and cost curves and often seem to implicitly assume the current incumbent is merely the undeserving beneficiary of those static market conditions. Indeed, as Baumol pointed out, limit pricing is generally only possible if an incumbent is a natural monopolist. If a firm is truly a natural monopoly, antitrust law has little to contribute because it is impossible to create competition in such a market. Antitrust law can generally only contribute by protecting or restoring competition in markets that can support multiple firms, or by keeping free the even more important competition to create new product advantages that confer temporary monopoly power. Natural monopolies are by definition more durable. For them, the only real role of antitrust is to protect competition to become the natural monopolist. Such competition provides a market test that the monopoly really is natural, and that it remains so since today’s natural monopoly can become tomorrow’s temporary one if technology, costs or demand change sufficiently. Such competition also assures that the most efficient firm becomes the monopolist. But the hypothesis in these proposals is that the incumbent is as or more efficient than the entrant (or else the entrant would hardly need protection), so such concerns are not at issue.

Instead, in natural monopolies inhabited by the most efficient firm, the grounds for regulating price are really no different than the traditional grounds for utility rate regulation. People who are otherwise attracted to such rate regulation might thus, where for whatever reason the government has failed to institute such rate regulation not surprisingly, favor employing predatory pricing theory to try to fill in gaps in natural monopoly markets. But the most likely reason that rate regulation does not exist for any particular industry is that the government was not persuaded by the arguments for it. And if one thought such natural monopoly rate regulation was warranted, there would be no reason to limit it to cases in that industry where some claim of reactive price cuts provides the pretext. Moreover, triggering price regulation for all reactive price cuts risks applying it in cases that do not truly involve natural monopolies. It also means conducting such regulation through adversarial litigation and antitrust tribunals that lack the ongoing involvement or expertise of utility regulators, or through other regulators who have not yet persuaded the legislature to give them the authority to engage in such general rate regulation.

E. Summary of Effects and Assessment of Possible Tradeoffs

We can summarize the effects of a restriction on reactive above-cost price cuts in the following table.

<table>
<thead>
<tr>
<th>EFFECTS OF RESTRICTIONS ON REACTIVE ABOVE-COST PRICE CUTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>On Consumer Welfare</td>
</tr>
</tbody>
</table>

297 Baumol, Quasi-Permanence, supra note , at 11.
<table>
<thead>
<tr>
<th>For Less Efficient Entry by Firms That Would Enter Anyway</th>
<th>Negative. Consumers of both incumbent and entrant pay higher post-entry prices.</th>
<th>Negative. Production shifted to less efficient entrant. Incumbent suffers uncompensated transition costs and decreased operating efficiency.</th>
</tr>
</thead>
<tbody>
<tr>
<td>For Less Efficient Entry (Weakly) Encouraged by the Restriction</td>
<td>Mixed. Consumers who buy from entrant pay less in short run. Consumers who buy from incumbent may pay less or more.</td>
<td>Negative. Production shifted to less efficient entrant. Incumbent suffers uncompensated transition costs and decreased operating efficiency. Entry costs dissipated.</td>
</tr>
<tr>
<td>For Efficient Entry</td>
<td>Negative. Consumers of both incumbent and entrant pay higher short term post-entry prices. Few efficient firms enter, thus increasing long term prices too.</td>
<td>Negative. Decreased long run incentive to create more efficient firms, and lower post-entry incumbent efficiency.</td>
</tr>
<tr>
<td>For Entrants That Can Only Become Equally Efficient if Incumbent Efficiency Deteriorates</td>
<td>Mixed. Depends on whether increased allocative efficiency offset by increased costs.</td>
<td>Negative. Production shifted to less efficient entrant, and incumbent efficiency declines.</td>
</tr>
<tr>
<td>For Entrants That Can Become Equally Efficient Solely by Increasing Own Efficiency</td>
<td>Negative. Consumers of both incumbent and entrant pay higher post-entry prices.</td>
<td>Negative. Production shifted to less efficient entrant in very short run, and incumbent suffers lower efficiency.</td>
</tr>
<tr>
<td>For Incumbent Pre-Entry Behavior</td>
<td>Mixed. May weakly encourage lower pre-entry prices, but also lessens incentives to create low cost incumbents.</td>
<td>Negative. Decreased long run incentives to create incumbents who are more efficient than pre-existing market options.</td>
</tr>
</tbody>
</table>

These conclusions differ from those of traditional analyses, which generally have instead assumed that restrictions on above-cost price cuts exchange certain short-term post-entry costs for an uncertain long-term post-entry gain. Instead, the restrictions confer no long term post-entry gain and can inflict long-term costs, and may sometimes confer a short-term post-entry gain, though on

---

298. See, e.g., Barry Wright Corp. v. ITT Grinnell Corp., 724 F.2d 227, 234 (1st Cir. 1984) (opinion of then-judge Breyer) (analogizing it to sacrificing bird in the hand for two in the bush); Demsetz, Barriers to Entry, 72 AMER. ECON. REV. 47, 56 (1982) (same); sources cited supra note ___.

-87-
other – and more frequent – occasions they inflict a short-term post-entry cost. Further, the restrictions may lower or raise pre-entry prices, but also impose serious pre-entry costs by reducing the creation of more efficient incumbents and entrants.

While these effects do not allow one to mathematically eliminate the possibility that the restrictions may sometimes be desirable, they do suggest that possibility is extremely unlikely for several reasons. First, the possibly beneficial effects on pricing are mixed, whereas the negative effects are unambiguous. Second, where these mixed effects do prove on balance beneficial, the effects are weak because the restrictions encourage little additional entry by less efficient firms. In contrast, the lion’s share of firms will be efficient and for them the effects on pricing are unambiguously negative. Third, the possible benefit to post-entry pricing in the case of the encouraged less efficient entrants is short run since they cannot survive in the long run once the restriction on above-cost price cuts expires. In contrast, the harms to pricing that result from discouraging the creation of more efficient entrants and incumbents are long term.

Fourth, even if there were a net benefit to consumer pricing, it would have to be weighed against the clear loss to productive efficiency. For reasons discussed above, trading off increased consumer welfare for lowered productive efficiency is generally not desirable even if we assumed a straight tradeoff between productive and allocative efficiency over a similar time frame. It is even less likely to be desirable when the consumer welfare benefits are mixed, weak, short run, and apply in a limited set of cases compared to a clear loss in productive efficiency over a longer period that covers a broader set of cases. Fifth, the loss of productive efficiency is not merely static but dynamic, undermining a competitive process of innovation whereby each firm has incentives to further lower costs or improve product performance, which confers enormous positive externalities on society.

Indeed, Richard Schmalensee showed some time ago that “privately profitable entry may not be socially desirable if the entrant's costs exceed those of existing firms” because it can worsen productive efficiency more than it improves consumer surplus. Thus he concluded that it could well be that: “Society as a whole would be better off if existing firms would be allowed to bribe potential [higher-cost] entrants not to enter, or if entry was restricted by government regulation of some sort.” And this was under the assumption that such entry was permanent and that free post-entry price competition was allowed. Where instead the less efficient entry is induced by a temporary price umbrella that worsens short term price effects and makes long term benefits futile, there is even more reason for skepticism. And the tradeoff is even more likely to be negative when one considers the effects on efficient entrants and incumbents too.

Finally, to the extent there are beneficial effects, they basically boil down to the case of a natural monopolist who cannot be threatened by an entrant who is equally or more efficient and is thus a good candidate for utility rate regulation. In such special cases, it would not be surprising that if restrictions on post-entry reactive price cuts that effectively impose a limit price might be beneficial if that limit price approximates what a rate regulator would impose. But to the extent those benefits are desired, the proposed restrictions are poorly tailored to do so because they extend well beyond such natural monopoly cases, do not cover all the natural monopoly cases one might

---

300 Id.
wish to regulate under such a theory, and are less likely to induce the correct rate. Thus, these benefits can more readily and accurately be achieved through utility rate regulation. Where such regulation already exists, then the proposed restrictions will not have these possible benefits. Where it does not exist, it would seem to reflect a societal judgment that utility rate regulation is undesirable.

**F. The Restrictions Cannot Reasonably Be Construed or Modified to Eliminate the Market Power Requirement**

As the above suggests, one key problem with the restrictions is that, because monopoly or market power is required before any firm’s prices can be regulated under any antitrust or competition law, any restriction on above-cost predatory pricing that hopes to protect less efficient entrants must be futile in the long run. One might thus be tempted to dispense with the monopoly or market power requirement. But this would require a statutory or treaty amendment. Further, as we shall see, this requirement is not merely an artifact of the particular proposals made. It is rather a necessary feature of any doctrine of predatory pricing. Nor would any such modification eliminate all the adverse effects of a restriction on above-cost incumbent pricing.

To begin with, monopoly or market power is required by existing competition law, which does not restrict even below-cost predatory pricing unless the actor has monopoly or market power. To be sure, we could change that law. But we could not do so through case law. It would require a statutory amendment in the U.S. or a treaty amendment in Europe. Under U.S. law, a claim that unilateral pricing decisions constitute monopolization (or attempted monopolization) under Sherman Act §2 requires proof not just of predatory pricing but monopoly power (or enough market power to create a dangerous probability of acquiring monopoly power). Likewise, European law requires proof of a dominant position to make predatory pricing actionable under Article 86. Monopoly power is not necessary under the U.S. Robinson-Patman Act, but even it requires some level of market power. Moreover, the Robinson-Patman Act has various statutory limitations that make it a poor vehicle for generally policing predatory pricing. In particular, the Robinson Patman Act is limited to price-discrimination (and thus does not cover a uniformly predatory price) and

---


303 Brooke, 509 U.S. at 222 (defendant must have enough market power that its predatory pricing creates at least “a reasonable possibility” of substantial injury to competition). The recoupment requirement may elevate the market power requirement even further. See supra note __
commodities (and thus would not cover airline transportation or other services). Further amendments would be necessary to restrict above-cost predatory pricing. In particular, the Robinson-Patman Act specifically allows price cuts to match competition in good faith, which directly contradicts the core of these proposals to restrict reactive above-cost pricing.

More important, any amendment eliminating the market power requirement would be unwise. Without such a requirement, a doctrine of predatory pricing would effectively aim to regulate all reactive pricing on competitive markets. Such competitive pricing is precisely what the antitrust laws seek to foster on the grounds that competitive markets can best set prices. Competitive firms are supposed to compete by each trying to match and then beat the price and quality of their rivals. To interfere with this is to interfere with the “central nervous system of the economy,” and “set sail on a sea of doubt” by requiring courts to determine what reasonable prices are on competitive markets. Moreover, once one dispenses with the market power requirement, it is not clear which firm in any given market would be subject to the restriction on reactive above-cost predatory pricing since all the firms in the competitive market are reacting to each other. One could try to ban all firms from reacting to new entrants, but then one faces the question why the law should so favor entrants (which would seem to lead to inefficient overinvestment in entry into competitive markets) and whether any new entrant would not then immediately become an incumbent forbidden from engaging in reactive price cuts. The result would be to ossify and distort pricing on competitive markets. Further, while such a rule would preserve the long term existence of the entrant, all the other ill-effects from imposing post-entry price floors would continue to apply.

Another possible modification would concede that any price restriction must expire when the monopoly power erodes, but provide that once the incumbent’s post-expiration above-cost price cut causes the incumbent market share to grow back over the monopoly threshold, that above-cost price would amount to attempted monopolization. Through this sort of regulation one might hope to keep the incumbent perpetually shy of a monopoly share. But this modified approach would raise new problems because the illegal pricing decision would be neither (1) a price cut nor (2) reactive to entry. Since the incumbent price cut would be itself legal, what the law would have to make illegal is the incumbent’s failure to impose a price increase (or output decrease) once the incumbent got back to a market share close to monopoly power. This hardly seems likely to promote consumer welfare. Other problems would result because the rule would no longer be triggered by a reaction to entry. The moment when the period of price regulation begins would become obscure, with the modified rule putting the incumbent at great peril for not guessing accurately when a court will deem it on the verge of passing the line to monopoly power again. Nor would the right baseline for a legal price or output be clear since it would no longer be the price or output that just preceded the moment of illegality. And again, while any benefits from entry would no longer be merely short run, all the adverse effects of the restrictions would continue to apply.

One might be tempted to respond to this problem with an amendment providing that, while

---

305 15 U.S.C. §13(b). The Act also allows different prices based on varying costs or market conditions. Id. §13(a).
307 United States v. Addyston Pipe, 85 F.271, __ (6th Cir. 1898), aff’d, 175 U.S. 211 (1899).
the bans on above-cost predatory pricing apply only to incumbents who begin with monopoly or market power, those bans continue to restrict those incumbents even after they lose their monopoly or market power. However, the effects of such a modified proposal would be even worse. The short run effects would be the same as the existing proposals. But the long run effects would differ. If unable to ever cut prices to match of beat the entrant, the incumbents would necessarily be driven from the market in a way that will not permit reentry. The market will thus be left to the new entrant who is, by hypothesis, less efficient. That new entrant will have incentives to raise prices to its own monopoly level, which will be higher than pre-entry incumbent prices because its marginal costs are higher. Thus, in the long run, rather than just being futile like the existing proposals, the modified proposal would affirmatively harm productive efficiency and consumer welfare.

In the longer run under this modified proposal, perhaps other less efficient entrants might enter, and produce a competitive market full of less efficient firms. In effect, a low cost monopoly would be replaced by a high cost unconcentrated market. Such a replacement is unlikely to be desirable for reasons discussed above.\textsuperscript{308} Again, we need not rely here on any controversial proposition that monopolists are generally more innovative more than competitive markets. It is enough to point out that where, as with the current posited tradeoff, the monopolist is by definition more efficient, it will likely be more innovative than other firms that have failed to figure out how to be equally efficient. This follows as long as the past history of firms correlates at least somewhat with their future. If so, then we can assume firms that were sufficiently innovative in the past to figure out how to make a superior product or to make it more cheaply are somewhat more likely to be innovative in the future than other firms that not only failed to demonstrate the same past innovative skills but cannot even imitate that past innovation sufficiently to achieve the same efficiencies.

Alternatively, one might try an amendment providing that the restriction on above-cost predatory pricing applies only to incumbents who begin with monopoly and market power, and persists even after they lose that power, but lasts only for some fixed period of time, like the 12-18 months suggested by Edlin. But there are two possibilities under such a proposal. The first is that being forced to mothball its capacity for this time has reduced the incumbent’s efficiency to the point that it no longer has an efficiency advantage over the entrant. If so, then such modified proposal would have the same effect as a permanent restriction on above-cost price cuts. The second is that this enforced mothballing of incumbent capacity has not eliminated its efficiency advantage. If so, then the regulation would again be futile because at the expiration of 12-18 months (or whatever period is specified) the incumbent would again lower prices and drive out the entrant. The restriction will still have unambiguously negative effects productive efficiency and inflict a wasteful contraction of production that will just have to be re-expanded. The effects on allocative efficiency will also remain unambiguously adverse for any less efficient entrants who would have entered even without the restriction, and the encouragement for additional entry by less efficient firms will remain weak. However, it would be the case, when a less efficient entrant is encouraged to enter, the effects on allocative efficiency would be positive since such a modified proposal would at least not give the incumbent affirmative incentives to raise prices in order to speed the day when the restriction expires.

\textsuperscript{308} See supra at IV.C.1.
V. UNAVOIDABLE IMPLEMENTATION DIFFICULTIES WORSEN THE ABOVE EFFECTS

In addition to the above fundamental problems posed by any restriction on reactive above-cost prices, the restrictions also raise many implementation difficulties that worsen their likely effects. But this is not because the restrictions are poorly formulated. It is because any formulation must make choices about how to deal with unavoidable problems that will bedevil any effort to regulate above-cost predatory pricing. No matter what system is adopted, it would have to somehow ascertain the moment of entry that triggers the price floor (or output ceiling), deal with quality changes designed to evade any price floor (or output ceiling), and define a price floor (or output ceiling) that will lead to inefficiencies unless precisely adjusted for changing market conditions. In doing so, there are no perfect choices. Rather, any choice will inflict some significant distorting effect on entry, innovation, and efficient pricing. One can try to adjust the restrictions to minimize these additional inefficiencies, but one cannot eliminate them, and they will worsen the adverse effects of the proposed restrictions. These additional inefficiencies are a sufficiently large that they would offset any gains from such restrictions even if, contrary to the above analysis, such net gains likely existed.

Past attention has focused on administrative problems in defining the post-entry price floors and output ceilings. But even bigger problems result from difficulties in defining the moment of entry and controlling for possible quality distortions. If the moment of entry is defined to be when the entrant actually begins sales, the incumbent will simply be able to cut prices beforehand, rendering the restriction ineffectual and even less likely to encourage entry. If the moment of entry is defined to be when the entrant first plans entry, then the law would be raising incumbent prices during a period where this is not offset by lower entrant prices, thus worsening the likely mix of effects. Further, if the moment of entry is given such an early definition, then either a 12-18 month period of restriction would expire by the time the entry starts (making the restriction ineffectual), or the period during which incumbent prices are restricted will have to be lengthened, worsening the inefficiencies that result from creating price or output inflexibility in the face of changing market conditions. Another huge problem is that any price or output floor will provoke inefficient increases in product quality, and any effort to clamp down on that by restricting product enhancements will hamper productive efficiency.

Further, the administrative problems with defining the price floors and output ceiling are underappreciated in two ways. First, it is not merely a matter of judgment whether the administrative problems with any flexible price floor or output ceiling outweigh the administrative problems with a cost-based rule – rather any flexible floor or ceiling necessarily creates larger administrative costs because implementing it requires assessing price-output possibilities up and down supply and demand curves that change over time rather than comparing one price to costs at a given output level. Second, these administrative problems cannot be avoided by tweaking the proposals. They are rather an inherent consequence of trying to regulate incumbent pricing or output. Whether the law uses a flexible standard or rule, the regulated price or output will often fail to accurately reflect changing market conditions and thus produce additional inefficiencies.
A. When Is the Moment of Entry?

Under all the approaches for restricting reactive above-cost price cuts (or output increases), the restrictions are triggered by entry. But the moment of entry is not so easy to define. Is it when the entrant first announces its entry? When it first applies for a permit or license? When it begins construction on a new plant? When it begins its marketing campaign? When it sells its first test product? Or when it first attempts a substantial quantity of sales? Edlin is the only one of the proponents to address this definitional difficulty, and he takes varying positions on it. In analyzing one case, he states that the attempt to enter did not qualify because the entrant never got to the point where it actually produced the product. In another case, he concludes that beginning construction suffices to trigger the ban even though the entrant had never yet sold the product. But either position raises problems, which are only exacerbated by ad hoc shifts from one position to the other.

Suppose one picks one of the later moments as the true moment of entry. Then the problem is that at one of the earlier moments the incumbent will know entry is forthcoming and thus can lower prices (or expand output) in anticipation. The restriction on reactive price cuts will be toothless because the incumbent can react before the defined moment triggers the restriction. For example, if the entry is defined by actual production, then the incumbent can just wait until construction is almost completed and cut prices before the entrant ever sells anything. If so, the restriction becomes ineffectual and is even less likely to ever encourage entry or have any beneficial effect.

To deal with this problem, Edlin effectively creates an ad hoc rule. In one case, cutting prices before the entrant makes any sales is inappropriate because the entrant’s construction plans made it “substantial.” In another case, cutting prices before the entrant makes any sales is acceptable because one can infer the entrant was “insubstantial” from the fact that a buyer with 50% market share accepted a 5-10% price cut from the incumbent. Edlin bases the latter conclusion on the assumption that such a big buyer’s incentives are largely aligned with consumer welfare. But this inference of efficiency is probably untrue because powerful buyers often have incentives to cut deals that benefit themselves even though they create seller market power. In any event, this approach introduces additional sources of great uncertainty: just which buyers are large enough that their acceptance of a reactive price-cut justifies deeming entrants “insubstantial,” and what are the other situations where an inference of efficiency will justify suspending the ban on reactive price cuts?

Suppose one instead picks one of the earlier moments of entry, such as announcing entry or applying for a permit or license. But this raises many other problems. First, with such an early definition to the moment of entry, the restriction will impose an incumbent price floor, with all the

---

309 Edlin, supra note , at 987-88.
310 Id. at 988.
311 Id.
312 Id. at 987-88.
313 Id. at 987-88.
314 See, e.g., Hovenkamp, Mergers & Buyers, 77 VA. L. REV. 1369 (1991); IV Areeda, Hovenkamp, & Solow, Antitrust Law at 204-06 & n.4 (rev. ed. 1998). This is just an application of the Coase Theorem: a powerful buyer and seller will have incentives to make an agreement that preserves supracompetitive pricing and divides the profits among them.
adverse effects on pricing and efficiency, well before the entrant actually makes any sales. This reduces further any likelihood that the benefits resulting encouraging entry that lowers post-entry prices will outweigh the adverse effects, for the period of possible benefit will be shorter than the period of adverse effects.

Second, such an early definition of the moment of entry may also make the restriction ineffectual. In particular any definition that tracks an entry announcement, application, or even construction will often mean that the moment of entry occurs more than 18 months before the entrant actually seriously sells its product. But the Edlin and Williamson restrictions only last 12-18 months at the outside. Thus, with such an early definition of the moment of entry, these restrictions are likely to expire before the entrant ever seriously sells its product, and thus cannot prevent an incumbent from adopting a reactive price cut after the entrant starts selling.

The profit-maximizing price floors do not raise this problem since they set no expiration time. But they produce a different anomaly. The incumbents’ prices would have to be monitored for a long period of time before actual entrant sales commence to make sure the incumbent came sufficiently close to maximizing short-term profits. Such monitoring is costly. Moreover, since the entrant would not yet be making sales, the price that maximizes short-term profits would be the monopoly price. Thus, such a restriction would mean that for a substantial period the government would be mandating monopoly pricing. Even if we want to encourage entry, it is hard to believe we want to do so by giving potential entrants an entitlement to require incumbents to charge monopoly prices before the entrant makes any sales. Further, lengthening the period of restriction will only worsen all the administrative problems of applying such price floors in the face of changing market conditions.315

Third, any early definition of the moment of entry will make the restrictions vulnerable to strategic exploitation. By merely announcing entry or making an application, any firm can restrict the prices of another firm (and under the Edlin proposal can freeze their prices and quality too). If one tries to avoid this by restricting the moment of entry to credible announcements or committed applications, then one has the ambiguity of just which announcements or applications are credible or committed enough to trigger the restriction, and just how incumbent firms are supposed to predict what antitrust litigation will in the future conclude on that topic. Picking some middle moment like actual construction of a new facility might work for some markets, but even when it does, it lends itself to reactive price cuts after the announcement or application but right before construction begins. And just when construction begins might itself be ambiguous.

Moreover, even if the prospect of future entry has been made certain by the announcement or application, how can an incumbent know whether the coming entrant will actually offer the 20% discount necessary to trigger the Edlin rule? This seems especially uncertain since, under Eldin’s own analysis, differences in quality might make a nominal 20% price difference insufficient.316 Even if the entrant says it will offer a 20% price discount and the same quality, such announcements are unreliable, nonbinding and may be made purely strategically to freeze their rivals. Here Edlin creates another ad hoc exception. Although no 20% price discount has been offered, the “substantial” entry requirement should be deemed satisfied if the entrant has construction plans to

315 See infra at V.C.
316 See infra at V.C.
serve most of the market, with the price freeze lifted if the entrant turns out not to actually sell at a 20% discount.\textsuperscript{317} This allows entrants to freeze rival prices by mere construction even though they have not undercut incumbent prices at all, and the creation of another ad hoc exception again undermines any certainty the rule might have had.

All these problems are multiplied if one not only triggers the restrictions in cases of actual entry, but as Williamson would, in cases where a “fringe firm” makes a “new investment” significant enough to be considered tantamount to entry.\textsuperscript{318} The impulse is an understandable because the economic effects of such investments and entry may be the same. But it exacerbates uncertainty when incumbents cannot be sure which rival investments will be considered significant enough to trigger above-cost restrictions, and it widens opportunities for strategic gaming when announcing any new investment might freeze the output of a dominant firm.

Again, the problem is not an avoidable one. To make them plausible, all the proposals have to start with some moment of entry to trigger the restriction on reactive price cuts. Otherwise, they would amount to a general regulation of pricing that is entirely inconsistent with a market approach. But no matter which moment one picks, the restriction either becomes toothless (eliminating any benefits) or lengthens the period of adverse effects and produces strategic behavior and anomalous results. If the moment of entry is defined to occur either when actual sales are made, or earlier when entry is planned with a short period of restriction, then the rule cannot really prevent the incumbent from adopting reactive price cuts. If the moment of entry is defined to occur earlier than when sales are made, then the period during which consumer prices are elevated by the price floor will exceed the period during which the entrant might lower prices, and anomalies and strategic abuses become possible. And any early definition that lengthens the period of restriction would worsen the difficulties in defining the incumbent price floor or output ceiling.

\textbf{B. Post-Entry Quality Changes}

Whenever prices are regulated, firms predictably shift to non-price competition. For example, back when airline prices were thoroughly regulated, airlines competed with fancy meals and more frequent, less crowded, flights. More generally, one can expect firms whose prices are regulated at above-cost levels to compete by improving the quality of their product. This complies with the restrictions on price cuts but effectively lowers the quality-adjusted price in a way that allows the incumbent to still drive out the less efficient entrant. But because the restriction prevents price cuts that otherwise would occur, it inevitably induces the creation of products that make a different quality-price tradeoff than buyers would prefer on a free market, and these quality improvements are thus inefficient.

The U.S. Departments’ proposals were partially responsive to this problem, regulating not just prices but airline capacity. Airlines would thus not be able to respond to an entrant by just adding planes to provide a more convenient schedule, which is one way of improving quality. But airlines could still have evaded this restriction by offering more frequent flights on smaller planes, which would be inefficient but still offer fliers more flexibility while complying with the capacity limit. Or airlines could inefficiently improve quality in other ways, with fancier meals or service.

\textsuperscript{317} Edlin, \textit{supra} note , at 988.
\textsuperscript{318} Williamson, \textit{Predatory Pricing, supra} note , at 292 n.26.
All these quality improvements would be inefficient because (to the extent the restriction on price cuts has bite) they would be replacing a price cut that consumers would prefer to the quality enhancement.

Thus, the U.S. Departments’ approach has the problem that generally bedevils efforts to restrict non-price competition. Whenever one tries to clamp down on one form of non-price competition, the underlying incentives drive firms to whatever forms remain unregulated. For example, back airline regulators tried to make their price regulations meaningful by clamping down on nonprice discrimination, they specified that airlines could only offer “sandwiches” on international economy flights. Airlines responded by such tactics as putting duck a l’orange on one slice of bread for an open-faced “sandwich.”

A firm might even have incentives to change its product so much that it can argue it has a new product that is not subject to the price restriction. This can create incentives to inefficiently improve or even worsen the product to make it sufficiently different that the price restriction can effectively be evaded.

The Williamson output-ceiling faces similar problems. Firms will have incentives to evade the output ceiling (and the effective price floor that implies) by increasing quality. Likewise, firms will have incentives to inefficiently improve or worsen its product because if the change renders the product sufficiently different, then it might not count as part of the same output. If courts respond by subjecting new products to the output ceilings imposed on old related ones, then the rule will deter genuine innovation.

Edlin attempts to address this problem banning incumbents not only from cutting prices but also from making any “significant product enhancements.” But this creates severe administrability problems. Just how is the antitrust court or jury supposed to decide which product enhancements are “significant,” or more to the point, how is the incumbent supposed to be able to predict what a future unknown judge or jury will later decide was “significant”? Further, what is a court supposed to do if the incumbent says it is not enhancing the old product but introducing a new one?

Moreover, to the extent this restriction on product enhancements is administrable, it is undesirable. It achieves the aim of lessening non-price competition that might undermine a price floor at the cost of lessening all product innovation. Even if the price floor did seem well designed to benefit consumer welfare by restraining monopoly pricing, that rarely is as important as the efficiency benefits of product innovation. But where as here the price floor’s contribution to consumer welfare is probably harmful (or at least questionable), there is no sensible reason to sacrifice the productivity gains of innovation in order to maintain the price floor.

Indeed, under the Edlin approach, a less efficient firm that realizes a wave of innovation is forthcoming has incentives to enter in order to trigger the prohibition on incumbent product enhancements. This not only has undesirable effects on incumbent innovation, it encourages costly and inefficient entry by a firm that would not enter but for the ability to freeze the innovation of others. This is undesirable enough when the innovation affects only one market. But because innovation in one market often ends up having applications to other markets, and sometimes even redefines the markets, it raises the even graver concern that a firm in a related market might enter

---

319 Edlin, supra note , at ___.
320 See supra IV.C-D.
the incumbent’s market to freeze innovation that might pose a competitive threat in that related market. This worsens the likely effects of any encouraged entry.

Again, the problem is an unavoidable one. One can leave quality competition largely unconstrained, which makes the price or output regulation ineffective at achieving its goal of encouraging entrants but harms customers by depriving them of the lower price-quality tradeoffs they prefer. Or one can really clamp down on quality competition, which makes the regulation more effective but at the excessive cost of eliminating product innovation.

C. Difficulties in Defining the Incumbent Price Floor or Output Ceiling

The approaches that set the incumbent’s post-entry price floor in relation to the price that would maximize short-term profits raise plain administrability problems. Determining what price maximizes profits is highly uncertain and variable over time. True, critics of cost-based test are correct that judging incremental costs can also be administratively difficult. But determining the profit-maximizing price requires determining not just the costs that were incurred at the marginal output level, but the costs all along the supply curve at every possible output level. Thus such profit-maximizing price floors multiply all the complex problems about projecting costs, distinguishing between fixed and incremental costs, allocating common costs, and valuating capital costs and risk. Worse, determining the profit-maximizing price also requires ascertaining the incumbent’s demand curve at each price and output point, as well as the extent of incumbent market power, to determine just what price equilibrates marginal revenue and cost. And determining the incumbent’s demand curve necessitates knowledge not just of total buyer demand at each price (which will turn not only on their inherent preferences but willingness to switch to substitute products or markets) but what outputs and prices rivals would offer at each incumbent price. Further, each of those curves, and thus the profit-maximizing price, will change from day to day as market conditions or technologies change.

In short, it is not merely a matter of judgment whether the administrative problems with any flexible price floor outweigh the administrative problems with a cost-based rule, even if one does not agree with my effort in Part II to clarify cost measurements. Any flexible floor must take into account changing market conditions and consider price-output possibilities up and down the changing demand and cost curves. A cost-based rule need only compare, at one actual output point, the incumbent’s price to its actual costs.

Given these difficulties, there is probably no practical way to determine any difference between an above-cost price and the short-term profit-maximizing price. Firms have trouble enough in making such judgments, but are in the business of doing so and in the end are policed by markets which weed out the firms that tend to guess wrong. Regulators are not. Worse, if made an antitrust claim, the issue will be left to antitrust courts that will have even greater difficulty since they are not (like a regulator might be) a single entity with the expertise and power to continuously monitor and prospectively approve price levels. Instead, antitrust courts will in effect be regulating prices through the clumsy vehicle of adversarial lawsuits that involve varying judges and juries asked to retroactively assess claims that a particular set of prices was too low. Such a cumbersome

---

321 See Joskow & Klevorick, supra note, at 255; Barry Wright Corp. v. ITT Grinnell Corp., 724 F.2d 227, 234-35 (1st Cir. 1984) (opinion of then-judge Breyer); Areeda & Hovenkamp, supra note, at 335-36.
Antitrust courts have consistently rejected any legal theory that requires them to monitor the day-to-day reasonableness of prices under changing market conditions as inadministrable for courts, burdensome on litigation, and too uncertain for business planning. See, e.g., United States v. Trenton Potteries, 273 U.S. 392, 397-98 (1927).

The U.S. Departments tried to avoid these problems by banning price cuts only if they are “clearly or “substantially” lower than the short-term profit-maximizing price. This should make incumbents less risk averse about pricing down to their short-term profit-maximizing level. But around any price floor there will be an inevitable zone of uncertainty. And here the zone is great because it depends not only on just what adjudication might conclude about the short-term profit-maximizing level, but also on the vague terms “clearly” or “substantially,” which will likely mean something different to every adjudicator who applies it. This approach does not eliminate the ambiguity, it just moves the ambiguity to a different price point, and worsens the degree of ambiguity to boot.

The U.S. Department of Justice also emphasized that American Airlines was foregoing an option it had itself decided was more profitable in the short run. But to the extent the rule hinges on the availability of such internal documents, all it will do is drive profit calculations underground, thus leaving the rule ineffectual. If it does not hinge on the existence of internal documents, then the rule will remain inadministrable and uncertain, deterring incumbents from desirable price cuts. These effects will be particularly undesirable in the cases of entry that really matter for the long run: when the entrant is (or soon will be) just as efficient as the incumbent.

The European cases may likewise be trying to escape these problems with their emphasis on the selectivity of the price cuts. But the rationale for this possible limitation is unclear. If a selective price cut really does not alter prices elsewhere, it must be because the selected area is its own market. The price cut then is simply occurring in the market where entry occurred, which is not much of a limitation. Perhaps the European authorities have in mind that the selectivity of the price cut means that the uncut prices in other areas provide an objective benchmark as to what price level does maximize short run profits. But while this (as those authorities at points suggested) helps dismiss the possibility that the price cut was prompted by some cost reduction rather than by entry, the fact is that the short term profit-maximizing price in a market with an entrant will differ from that price in other areas where there is no competitor. So the selectivity of price cuts cannot avoid the inadministrability problem of determining what the short term profit-maximizing level is. And it adds the inadministrability problem of determining just when pricing is sufficiently “selective” to invoke the rule.

Edlin tries to get around these well-known problems with a flat rule. The incumbent cannot charge any price lower than its pre-entry price if the entrant has offered a 20% discount. But this also has serious problems. Even if the nominal price is clear, the effective price will vary with differences in service, credit, or delivery associated with the product. There will also be

---

322 Antitrust courts have consistently rejected any legal theory that requires them to monitor the day-to-day reasonableness of prices under changing market conditions as inadministrable for courts, burdensome on litigation, and too uncertain for business planning. See, e.g., United States v. Trenton Potteries, 273 U.S. 392, 397-98 (1927).

323 See supra at I.A.

324 140 F. Supp. 2d at 1152-53, 1155, 1181.

325 See supra at I.A.
ambiguities about the nominal price whenever the incumbent varies prices or sells a variegated product. For example, in the airline industry that provoked these proposals, a seat on a plane is sold at widely disparate rates depending on purchaser identity, advance purchase, Saturday stayovers, restrictions on changes, and the competing demand from customers in all the other cities that fly through that route. The last factor means the price for a seat from Hub City to Spoke City A turns not just on demand for travel between Hub and Spoke A, but also on demand for travel between Spoke Cities B-Z and Spoke City A.\textsuperscript{326} There is no one single price to pick. If courts tried to pick an average price, they raise prices for the whole array (roughly half) of customers who otherwise would have paid a lower price. Similar problems apply if the incumbent varied financing or credit terms for different buyers.

These problems are multiplied by the need to compare the pre-entry incumbent schedule of prices to entrant prices to determine whether the entrant prices are 20% lower. Indeed, the need for that comparison introduces a new problem: the entrant product might be of lower quality. Edlin recognizes that this will require a quality-adjustment to determine whether the entrant has offered a “20% quality-adjusted discount.”\textsuperscript{327} These quality-adjustments are significant enough that a 25-40% price difference only “probably” qualifies as a 20% discount.\textsuperscript{328} But once one introduces this vague assessment of quality-adjustments, any supposed administrative simplicity vanishes. The problem is even worse if one resorts to Edlin’s alternative standard that the entry has offered a “substantial” discount,\textsuperscript{329} a vague placeholder whose definition can vary widely from tribunal to tribunal.

More important, to the extent the pre-entry price and 20% discount trigger can be established, setting a price floor for the incumbent (and price ceiling for the entrant) has obvious inefficiencies. Prices in all markets vary with rapidly changing costs, technologies, and demand. Requiring firms to stick to price floors and ceilings thus rapidly produces inefficiency. For example, if demand or costs go up sharply, it might be efficient for the entrant to raise its prices. But it may not do so because going above a price 20% below the pre-entry incumbent price will free the incumbent from its own price floor. The entrant will thus bear some inefficiency in its pricing to get the benefits of imposing an inefficient price on the incumbent. From the incumbent’s perspective, the existence of the entrant is only one factor that might influence its pricing. To set a price floor at pre-entry levels ignores all the other reasons for lowering prices, like technological changes or drops in demand or costs. This will invariably produce inefficiency. One need only recall all the distortions under Nixon’s wage and price controls, which caused inefficiencies that took the rest of the decade to sort out. Or consider specifically the airline industry that provoked these proposals. There costs routinely change sharply with shifts in fuel or labor costs, and demand not only varies with economic cycles but predictably varies seasonally. Sometimes the shifts are even sharper: imagine how disastrous it would have been to freeze airline prices at the level they were at right before the September 11, 2001 attack dramatically reduced demand for airline flights. Further, freezing into place inefficient prices on a route between Hub City and Spoke City A not

\footnotesize
\begin{itemize}
  \item \textsuperscript{326} See supra at III.A.
  \item \textsuperscript{327} See Edlin, supra note , at 982.
  \item \textsuperscript{328} Id.
  \item \textsuperscript{329} Id. at 945, 967.
\end{itemize}
only causes inefficiency in that market, but spreads inefficiency on all the connecting flights from Spokes B-Z to the Hub that in part transport customers who travel on to Spoke A.

Edlin attempts to address the problem of changing market conditions in two ways. First, he allows for an exception when after-entry costs fall “dramatically,” which he defines as by at least 20%. But this does not alter the inefficiency of the price floor for any cost reduction below 20%, nor the inefficiency of the effective price ceiling on the entrant if costs increase. Nor does it alter the inefficiency of the price floor (and ceiling) if there have been changes in demand rather than cost. And it renders the Edlin restriction ineffectual whenever costs do go down by 20% or more.

Second, Edlin sets a 12-18 month outside limit on his ban on reactive price cuts. But this does not eliminate the problem during that 12-18 month period. Any changes in market conditions that do occur will make the short term pricing freeze inefficient. Nixon’s wage and price freeze, after all, only lasted three months. Moreover, setting the 12-18 month outside limit only reinforces the futility of the ban on reactive price cuts. It means that even if entrant expansion takes longer than that to erode the incumbent’s monopoly power, the incumbent will (unless it has lost its efficiency advantage) be able to cut prices to a level that will drive the entrant out.

The Williamson rule might seem a flat rule like the Edlin rule, only substituting pre-entry output for pre-entry price. But, seeing one of the problems of changing market conditions, Williamson recognizes that such a flat rule would be a disaster if demand increased. So in the end, he proposes that the output ceiling be “demand adjusted.” But this creates all sorts of new problems. Just how is one supposed to know how much of an adjustment in output to make when demand has increased? Williamson tries to get around this problem in various ways.

First, Williamson suggests projecting future demand from past trends. But there is no reason to think this chartist approach works any better for projecting demand than for predicting future stock prices. Demand goes up and down depending on changes in consumer income, preferences, innovation, prices, and quality, as well the availability, price, and quality of substitutes. Courts cannot accurately project future demand from a past trend. Nor will that inquiry give an unambiguous answer since every trend will depend on the dates one picks and adjustments one makes. In any event, the extent to which increased demand will justify increased output depends on the intersection of that new demand with the incumbent’s cost curve. Thus, adjusting for demand cannot avoid the problems of inquiry into costs, but multiplies them by requiring inquiry up and

330 Edlin, supra note 37, at 969-970.
331 Id. at 945-46, 969-
332 See JACk, E. MEYER, WAGE-PRICE STANDARDS AND ECONOMIC POLICY 67 (1982). The additional problems created by the more flexible wage and price controls applied in the months after the freeze was lifted give testament to the difficulty of making price adjustments based on changing economic conditions. Id. at 67-69.
333 See Williamson, Predatory Pricing, supra note 37, at 305-06, 333-34.
334 Id. at 305-06.
335 Williamson suggests relying on internal incumbent records. But since incumbents do not have a crystal ball either, they will often err in their projections. This is not so costly when firms can adjust to future realities, but if firms are bound by projections even when erroneous, the costs are much higher. It is not clear why we want to visit such high antitrust penalties on those projections that do not pan out. Further, any rule based on incumbent documents simply invites the strategic drafting of documents in response to the rule. Although Williamson assumes firms will set actual output and prices in response to legal rules, he is oddly dismissive of the notion they will take the less costly tack of changing the wording of their documents in response to legal rules.
down the cost-output curve. Perhaps most worrisome, limiting future output based on past demand trends discourages incumbents from making investments in innovation and product improvements designed to accelerate any trend of increased demand.

Second, given inaccuracies in trend projection, Williamson changes his test to allow an output increase up to 10% above the projected demand. But this 10% buffer makes his restriction ineffective at protecting entrants (and thus unambiguously harmful) when demand has not increased by that amount. Further, it has the same flaw as the U.S. Departments’ approach: it does not eliminate the ambiguity, it just moves the ambiguity to a new point. Now the ambiguity will be about whether or not the incumbent is at a point 10% above an ambiguous demand-adjusted output. These ambiguities are worsened if, as Williamson did in response to criticism, the percentage buffer is varied from case to case based on the estimated degree of projection error.336

Third, Williamson says that when predatory pricing is alleged in one of many multiple geographic markets, then a simple comparison will tell us whether output in one of those markets has increased “disproportionately.” Obviously, that only applies when the incumbent is in multiple geographic markets and has monopoly power only in some. And even when it does apply, the ambiguities remain great. It will generally be unclear whether one can properly analogize between demand in different geographic markets. They have different consumers with different consumer preferences and income. Quality might differ. The markets might have different input costs, or different degrees of market power, both of which influence prices and thus affect realized demand for the good. Likewise substitutes might differ in price and quality, and often their availability will differ because some geographic markets are further from substitutes than others. There is thus no general reason to think demand will rise by the same amount in different geographic markets, or to think courts can accurately quantify the differences. And all these ambiguities are exacerbated if the court is asked whether the difference is “disproportionate,” which will mean varying things to varying tribunals.

True, these problems are somewhat reduced because, like Edlin, Williamson sets a 12-18 month limit on his rule. But this does not eliminate the problem during that period and reinforces the long term futility of the restriction. Further there are other problems. Although Williamson adjusts for an increase in demand, he makes no adjustment for a decrease in costs, even though that too would indicate the efficiency of an expansion in output. Further, where a product is variegated or changing, it may be difficult to determine what even the baseline pre-entry “output” was. The Williamson rule raises particularly difficult problems when a firm responds to an output ceiling by introducing a “new” product that is similar to the old product but varies it somewhat.

But the problem is not with these particular adjustments. The problem is that no effort to tweak these restrictions can eliminate the underlying problems. Those problems are rather an inherent consequence of trying to regulate incumbent pricing or output. There are two basic methods of implementing such regulation.337 One can, like Edlin, use a bright-line rule that, as stated, is over- and underinclusive and thus sacrifices facial correlation to the factors that affect its social desirability in light of changing market conditions. Or one can, like the European doctrine, the U.S. Departments and Williamson, use a standard that correlates better to such social desirability

336 Williamson, Predatory Pricing II, supra note , at 1192 n.40.
but cannot be applied as precisely, and thus will in actual application also be over- and underinclusive. Whichever method one chooses, the regulated price will often fail to accurately reflect changing market conditions and thus produce additional inefficiencies.

**D. Conclusion on Implementation Difficulties**

The fundamental problems posed by restrictions on above-cost pricing are exacerbated by other problems whose precise nature varies with the specific restriction but that cannot be avoided in one form or the other. The moment of entry that begins the period of restriction will either be defined in a way that makes the price restriction ineffectual, or in a way that makes the period of price restriction longer than the period of entrant pricing, exacerbating its adverse effects on pricing and innovation. Quality changes will either be left unregulated, which makes the price restriction even more ineffectual and encourages inefficiently high levels of quality, or will also be restrained, which freezes desirable innovation. The price floor will either be fixed, freezing prices at levels that become inefficient as market conditions change, or uncertain, causing similar inefficiencies because of imprecise application and driving prices up because of risk aversion. All these are serious adverse effects that make it even less likely the restrictions will have beneficial effects.

**VI. THE BAUMOL BAN ON IMPERMANENT REACTIVE PRICE CUTS**

Professor Baumol offers a somewhat different rule from those that would prohibit certain reactive above-cost price cuts. He would allow an incumbent monopolist to make reactive price cuts, but forbid those reduced prices from being raised after the entrant leaves the market unless costs or demand have changed.338 He would apply this price-ceiling for a quasi-permanent period, and suggests five years as a possible choice.339 This rule would not make any reactive above-cost price cuts themselves illegal. But the Baumol rule would mean that making a reactive above-cost price cut subjects incumbents to a regime of price regulation that itself imposes costs on them. In particular, it forces incumbents to keep in place a price that might become less profitable if antitrust courts do not correctly adjust for changes in market conditions. Baumol’s rule thus amounts to a restriction on reactive above-cost price cuts with a unique penalty. The penalty would not be standard antitrust damages. The penalty is instead whatever costs are associated with triggering the equivalent of quasi-permanent monopoly rate regulation.

Edlin argues that the Baumol rule should be rejected because it does not fit the standard Grinnell definition of prohibiting conduct that tends to create or maintain monopoly power by excluding rivals.340 Instead, Edlin argues, the Baumol rule prohibits a price increase that would, if anything, encourage entry that might end the monopoly power. But the Baumol rule does not really prohibit price increases simpliciter. It prohibits impermanent reactive price cuts. Thus, if its effects were desirable, one could easily square the Baumol rule with the standard legal definition. One need only say that impermanent reactive price cuts are not deemed “competition on the merits,” but rather

---

338 Baumol, *Quasi-Permanence, supra* note , at 4-6.
339 *Id.* at 8.
are deemed strategic anticompetitive pricing to exclude rivals, whereas quasi-permanent reactive price cuts are deemed “competition on the merits” since they only drive out entrants through means that confer enduring benefits on consumers. As usual, whether or not we treat the conduct in question (an impermanent reactive above-cost price cut) as “competition on the merits” must turn not on conclusory legal labels but on a close analysis of whether banning that conduct on balance has desirable consequences. Once that analysis is completed, the legal label should follow.

A. Post-Entry Effects

Post-entry, the Baumol rule will have some ill-effects. We can divide the cases into two possible scenarios. One possibility is that the costs of triggering quasi-permanent rate regulation will be sufficiently high that the incumbent will be deterred from cutting prices to a level low enough to drive out the entrant. In this case, the Baumol rule effectively sets a post-entry incumbent price floor, and the effects are the same as considered in Part IV.

The other possibility is that the cost of triggering rate regulation will not deter the monopolist from cutting prices to a level low enough drive out the entrant. In this case, the short-term post-entry effects will, if any, be adverse. Prices will go down, and the entrant will exit. But because any price-cut is quasi-permanent, the incumbent may be reluctant to cut prices quite as aggressively as it would have if prices were unrestricted. If so, prices will be higher and consumer welfare worse off in the short run. However, the long-term post-entry effects might be better in this third scenario because, after the entrant has exited, the monopolist will have to keep prices at that lower level for some quasi-permanent period. Thus one cannot say of the Baumol proposal, as one can of the others, that it is necessarily futile in the long run. This apparent advantage is, however, more that compensated by the fact that such a long-term price ceiling creates even worse implementation difficulties problems and adverse incentive effects.

B. Implementation and Incentive Problems

To avoid problems in defining entrants, Baumol ultimately triggers his rule by exit rather than entry. His price ceiling applies “to any firm whose low prices are suspected of having driven its competitor from the field, whether or not that competitor was a recent entrant.” But this exit test raises many new problems. First, the fact of exit can be unclear or invite strategic manipulation. What happens if a price cut does not drive a rival out of the market but reduces it to a crippled fringe size? If that does not count as an exit because the firm is still “in the field,” then an incumbent will have incentives to inefficiently decline to service some set of customers in order to leave entrants in business. And if small entrants do not count, courts have to define just what the size threshold is.

Second, the cause of exit will often be unclear and so plausibly connected to rival price as to make the Baumol rule ubiquitous. Firms exit markets all the time. Their exits have multiple

341 See supra at I.B.
342 See Edlin, supra note , at 978-79.
343 Baumol, Quasi-Permanence, supra note , at 6 n.17 (emphasis added).
344 Or after exit it might do the same to induce a compliant new entrant that will stay small but can serve as an excuse for lifting the price ceiling.
causes that are difficult to sort out, an uncertainty only worsened by a test based on whether a causal link to the price cut is “suspected.” Indeed, failed firms could always plausibly connect their exit to their rival’s prices. After all, presumably at some price they would have stayed in the market. Do we really want every firm exit to trigger rate regulation of any remaining firms in that market that have market power? That undermines normal market competition since in most cases firms have market power precisely because they are more efficient and thus able to charge lower prices than their rivals.

Third, even if we know we have a qualifying exit, we must define the precise moment of exit that determines when, and at what price, the cap is triggered. What happens if the incumbent increases prices just before the entrant exits? Baumol allows the incumbent to rescind a price cut if the entrant is still “alive and well” but that raises difficult questions about just how well the entrant has to be. In practice, there will be varying prices during any period of incumbent-entrant competition. It will be unclear what time to use as the baseline, and choosing any particular time invites strategic manipulation.

Even if exit issues are resolved, defining the price and product on the exit date can be hard when both are variegated, and when associated terms influence the effective price. The incumbent also has incentives to introduce a related “new” product to evade the ceiling, requiring an unwelcome choice between allowing evasion and clamping down on new innovations. Further, after that date, demand shifts will require changing the price ceiling with all the problems described above for the Williamson approach. Likewise, cost shifts will require changes with all the problems of rate regulation noted for the profit-maximizing price floors. But the problems are even worse. If the price ceiling is mistakenly set too low, it can make the incumbent lose money and even drive it out of business entirely. Further, if a mistakenly set price ceiling reduces incumbent output, there will by hypothesis be no entrant to take up the slack in output.

Finally, trying to maintain the price regulation for a quasi-permanent period of five years exacerbates the problems created by changing market conditions. True, one could try (and Baumol is open to) other specifications of the period of price restraint. Professors Joskow and Klevorck, for example, basically adopt the Baumol rule but change the period of quasi-permanence to two years. But the quicker the price ceiling expires, the more ineffectual the rule. Thus, the underlying problem remains that, no matter what specification one makes, one faces the problem of greater inefficiencies the longer the period is and greater ineffectualness the shorter the period is.

To try to get around these linedrawing problems, Baumol allows price increases as long as
they are within “an order of magnitude” of the claimed increase in demand or costs.351 By now this gambit should be familiar, and it has the same problem as the efforts to avoid linedrawing by saying a price or output has to “clearly,” “substantially,” or “disproportionately” exceed some benchmark.352 All these rules move the ambiguity to a new point but cannot eliminate it. And they do so at the cost of making the posited rule ineffectual. Presumably Baumol does not mean the mathematical definition of an order of magnitude since that would allow any price increase as long as it was within a multiple of ten of the posited increase in demand or costs, and really make the rule ineffectual. But whatever meaning is given to the term, some tradeoff of harmful effects remains.

Where the Baumol price ceiling most worsens the types of concerns considered above is in it adverse effects on innovation. Like the price floors, a price ceiling will induce quality changes to evade the price restriction that are inefficient and would not otherwise have been tried. But now the incumbent can be expected to try to evade the price ceiling by making its product worse through cheaper production, so that it can still earn a monopoly profit, which not only creates an inefficient price-quality but degrades product quality. Even more problematic is the case where the price ceiling cannot effectively be evaded. Then, any investment in innovations to improve the product in a way to make it more valuable to consumers will be discouraged because the incumbent will not be able to raise prices to reflect that extra value and recoup the cost of that investment. Such a lowering of productive innovation is likely to be far more detrimental than any gain in allocative efficiency.353

C. Ex Ante Effects

The Baumol ban on impermanent reactive above-cost price cuts will, if anything, offer even less encouragement to entry than the various restrictions on reactive above-cost price cuts. If entrants foresee that the rule will not prevent incumbents from cutting prices to a level that will drive them out, the rule cannot encourage entry at all. If entrants instead foresee that the rule will effectively impose a price floor on the incumbent, then it will have the same effect of the Edlin, Williamson or Departments’s proposals. The long term futility of protecting less efficient firms means that their entry will hardly be encouraged, and the rule provides no encouragement (and possibly some discouragement) to the more efficient firms that would otherwise enter.

The Baumol rule is even less likely to create incentives for ex ante limit pricing than the other rules because it offers less encouragement to entry. Indeed, since the incumbent retains the option of driving out the entrant with a reactive price cut that amounts to an ex post limit price, it is hard to see why the incumbent would ever adopt that limit price ex ante.354 They would be better off charging a monopoly price, and imposing a limit price only for a quasi-permanent period after entry, than charging a limit price every day. Not only would the reactive strategy mean that incumbents would get to charge a monopoly price rather than a limit price on more days, it also means that incumbents are less likely to impose a limit price that is unnecessarily low because

351 Baumol, Quasi-Permanence, supra note , at 7.
352 See supra V.B.
353 See supra at __.
354 Edlin reaches the same conclusion that the Baumol rule will never induce ex ante limit pricing, but does so based on different reasoning. Edlin, supra note , at 979.
incumbents imagine entrants might be more efficient than they turn out to be. Instead incumbents can impose just the right post-entry limit price to drive out the entrant.

Finally, when entry occurs, and incumbents respond with price cuts that trigger a long-term price ceiling, the Baumol rule discourages innovation and investments by the incumbent in product improvement or, even worse, encourages product degradation. The problem is not just that this will occur post entry, but that the prospect of such an *ex post* restriction on incumbent prices will reduce each firm’s *ex ante* incentives to make the investments of time and money that created something so valuable it enjoyed monopoly power.355

### D. Conclusion on Banning Impermanent Price Cuts

Although not technically a ban on any reactive above-cost price cuts, the Baumol rule requiring that any price cut be quasi-permanent has similarly adverse post-entry effects. The big difference is that its imposition of a price ceiling may sometimes buy increased long-term post-entry allocative efficiency. But it does so at a cost of greater administrative problems and a baleful effect on innovation that likely outweighs any benefit. Moreover, the Baumol rule is even less likely than the other proposals to have any beneficial *ex ante* effect on entry or pre-entry pricing.

### CONCLUSION

Both recent and longstanding analysis supporting a ban on above-cost predatory pricing requires a better response than current scholarship has so far given for why predatory pricing should be restricted to below-cost prices. This Article endeavors to provide that better response by showing why efforts to restrict above-cost reactive price cuts are likely to be futile and harmful.

One reason is that reactive above-cost prices often do not protect incumbent market power at all, but rather are a normal competitive response to an entrant who has undermined a competitive schedule of discriminatory prices that maximized total output given common costs. This is particularly true in the airline industry that provoked the recent proposals to restrict reactive above-cost price cuts. Airlines that operate hub-and-spoke systems incur common costs that cut across their different routes, and although on some routes their market share and prices may appear high, they are in sufficiently vigorous competition with other airlines that they earn no positive economic profits. Thus, it is likely that their price discrimination among different routes reflects not market power and an ability to reap supracompetitive profits, but rather their competitive adoption of the schedule of discriminatory prices that maximizes the total output of their hub-and-spoke systems. Reactive price cuts in response to entry that undermines that output-maximizing schedule of prices is a natural competitive response, and efforts to prevent such price cuts would likely have the adverse consequence of increasing prices along the rest of the hub-and-spoke system, reducing the total output of the hub-and-spoke system, and harming aggregate consumer welfare.

Even when incumbents do have market power, restrictions on their ability to adopt reactive above-cost price cuts are unlikely to achieve the objective of encouraging and protecting entry because less efficient entrants cannot survive in the long run, and entrants who are (or will

---

355 *See supra* at IV.D.
predictably become) more efficient need no encouragement or protection. Further, such restrictions will have harmful effects by raising prices and lowering productive efficiency during any period of price restriction, inflicting wasteful transition and entry costs, as well as distorting innovation and price flexibility in response to changing market conditions. And the restrictions will discourage the creation of more efficient incumbents and entrants, which are ultimately far more important.

The dynamic intertemporal models of above-cost predatory pricing offered by several leading economists, including not just Edlin but legends like Williamson, Baumol and Stiglitz, have made important advances over the traditional static model that has dominated since first put forth by Professors Areeda and Turner. It is vital to consider not just short term and long term effects, but \textit{ex ante} effects too. But while the intertemporal models have been usefully dynamic in considering incumbent strategies, they have been surprisingly static in their assumptions about market demand, costs, and technological changes that affect both. They have failed to consider that competition between incumbents and entrants is generally competition about which can become more efficient in ways that change demand and cost curves. And they have failed to properly appreciate the ways in which changes in demand and costs and technology can undermine their regulations of price, and how reductions in productive efficiency can offset the posited gains to allocative efficiency. They have also failed to take sufficient account of the dynamic responses of not just incumbents and entrants, but also customers and capital investors, to variations in legal rules trying to protect entrants from reactive price cuts.

Taking these factors into account in a fuller dynamic analysis reaffirms the wisdom of the position that antitrust law should not recognize any claim of above-cost predatory pricing. It also helps specify just what should count as costs. In particular, costs should be defined in whatever way assures that an incumbent pricing at cost could not deter or drive out an equally efficient entrant. This test should be met by a cost measure that includes all costs of the allegedly predatory increase in output that are variable to the predator during the period of alleged predation, since short-term threats or pricing strategies that exceed short term costs should not be able to deter long term investments or entry. Alternatively, if short-term pricing could deter such long term decisions, this test would be met by a cost measure that reflected the magnitude of predator costs for the sorts of costs that are variable to the rival during the period of entry or investment decisions influenced by the short term existence or threat of such pricing.