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Predatory Pricing

Aaron S. Edlin, *University of California, Berkeley*

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Aaron Edlin
Richard Jennings Professor of Law and Professor of Economics,
UC Berkeley
And
National Bureau of Economic Research

Abstract

Judge Breyer famously worried that aggressive prohibitions of predatory pricing throw away a bird in hand (low prices during the alleged predatory period) for a speculative bird in the bush (preventing higher prices thereafter). Here, I argue that there is no bird in hand because entry cannot be presumed. Moreover, it is plausibly commonplace that low prices or the threat of low prices produce anticompetitive results by reducing entry, inducing exit, and keeping prices high. I analyze three potential standards for identifying predatory pricing. Two are traditional but have been tangled together and must be distinguished. First, a price-cost test based on sacrifice theory requires that either price or cost be measured by what I describe as "inclusive" measures. A price-cost test to prevent the exclusion of equally efficient competitors, by contrast, requires that price and cost be measured by more traditional "exclusive" measures. Finally, I propose a consumer betterment standard for monopolization and consider its application to predatory pricing. I

[1] I owe a deep debt to my co-author Joseph Farrell whose work with me layed the foundation for the consumer betterment proposal (A yet unfinished working paper provisionally titled "Freedom to Trade"). I am also grateful for discussions with Jon Baker, Michal Gal, David Gilo, Justin McCrary Ralph Moore, Daniel Rubinfeld Christopher Sagers, Steve Salop, Carl Shapiro, Eric Talley, Abe Wickelgren, audiences at NYU School of Law, UC Berkeley, and the 2010 Meeting of the Law and Economics Association, and especially Louis Kaplow. I am also grateful for the research assistance of Omari French.

explain how these three standards would affect the outcome of and focus of arguments in the American Airlines case, and argue that the consumer betterment standard is a promising alternative to the more traditional tests as it can catch exclusionary behavior of firms like American Airlines, behavior that is likely to deny consumers better deals.

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1. Introduction

Antitrust aims to make markets more competitive, with the ultimate aim, of low consumer prices, or more generally of high consumer welfare.[2] On these terms, predatory pricing may appear a paradox, because a predatory pricing claim asserts that a low price is anticompetitive.[3] Some put a point on the matter, saying that a predatory pricing claim asserts that a price is *too* low.

The so-called paradox is not a deep one, however, and is misleading, because while a rival complains of the low price, antitrust courts would ignore the complaint absent some convincing story that links the low price to a higher price; this higher price is the real policy concern guiding the law. Thus, the traditional story of predatory pricing has an incumbent or would-be monopolist driving an entrant or existing rival out of the market so that the incumbent can raise prices. The threat is not the low price but the high price. Edlin [2002] emphasizes instead the danger of an unnecessarily high pre-predatory, pre-entry price. He points out that banning the price cut can encourage the incumbent to charge low prices in the first place. Again, the threat is not the low price (entailed by the price cut), but the absence of an everyday low price "requiring" the cut.

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[2] *Reiter v. Sonotone Corp.*, 442 U.S. 330, 342 (1979); *see also* "Statement of Commissioners Harbour, Leibowitz and Rosch on the Issuance of the Section 2 Report by the Department of Justice," Federal Trade Commission, Sept, 2008, and Lande, R.H., Wealth Transfers as the Original and Primary Concern of Antitrust: The Efficiency Interpretation Challenged, 32 Hastings L. J. 67-106 (1982).

[3] *See, e.g.*, Antirust Paradox, Robert Bork (1978).

Whatever the timing, the competition problem is a high price during a period without competition or with less intense competition. Predatory pricing claims are less a paradox than they are a challenge. The challenge for law and competition policy is to distinguish low prices or price cuts that raise average or "regular" prices from those that lower them. When this challenge proves frustrating, the temptation is to abandon the venture and declare predatory pricing beyond the scope of competition law and policy.

Below, I begin by summarizing and critiquing prominent thinking about predatory pricing. Section 2 argues that Judge Breyer's bird in hand is a fallacy. I explain in Section 3 that the strongest Chicago School skepticism of the existence of predatory pricing has weak theoretical foundations even in its wheelhouse (the case of symmetric costs and information). When information is asymmetric and/or when the monopoly has cost advantages, these foundations liquify as Section 4 explains. Following this theoretical discussion, Section 5 examines the state of empirical knowledge.

Sections 6.1 and 6.2 distinguish two strands of thought that courts and commentators have tangled into a thick knot: one is the sacrifice justification of price-cost tests; and the other is the equally efficient competitor justification. The two strands lead to distinct conceptions of the "appropriate" measure of cost. The sacrifice notion requires implementing an "inclusive" measure of cost or price; in contrast, the more common "exclusive" notion is appropriate (under certain

assumptions, anyway) to prevent the exclusion of equally efficient competitors. I introduce and define inclusive and exclusive notions of cost and price in Section 6.1.

Oddly, neither protecting equally efficient competitors nor preventing sacrifice are closely connected to the predominant welfare goal of antitrust, which is the protection of consumer welfare. Section 6.3 therefore introduces a new consumer betterment standard for identifying exclusion in monopolization cases;[4] the standard proposes asking whether a monopoly's actions are likely to exclude from its market a competitor who would provide consumers a better deal than they get from the monopoly.[5] As I will explain, the consumer betterment standard is not the same as maximizing consumer welfare. Applying the consumer betterment standard to the *American Airlines* case might have allowed the Department of Justice to win on the evidence they presented and would have provided a different avenue of proof more directly geared to consumer welfare, as Section 7 explains. Although recoupment is not itself an element under the consumer betterment standard, raising prices after a predatory episode is an important part of a case.

Section 8 discusses the relationship of consumer betterment to the price freezes of Baumol [1979] and Edlin [2002].[6] All have in common that they can condemn pricing patterns that never dip below cost, and all are designed to increase

[4] As far as I know, the standard is new but I fully expect that various historians of antitrust will soon inform me of its antecedents and I look forward to learning of them. Little in truth is new under the sun.

[5] The consumer betterment standard for distinguishing anticompetitive from pro-competitive exclusion is inspired by my work with Joseph Farrell.

[6] Edlin, A. (2002), Stopping Above-Cost Predatory Pricing, The Yale Law Journal, 111 (4), 941-991. Baumol, W. J., Quasi-permanence of price reductions: a policy for prevention of predatory pricing. Yale Law Journal Vol 89 No 1 (1979)

the gains that consumers get from entry. In the case of reactive price cuts, as in American Airlines, the Baumol price freeze and the consumer betterment standard are similar and both are less aggressive than an Edlin price freeze. Consumer betterment, however, could have general application in monopolization cases not just in predation.

2. Breyer's Bird-in-hand fallacy

One of the main reasons that noninterventionists argue that plaintiffs should jump a high hurdle to prove a predation case is the view that alleged predation generally involves unarguably competitive behavior (a good) whereas any consequent bads involve arguable and uncertain claims. Judge Stephen Breyer (now Justice Breyer) put a colorful point on the matter in *Barry Wright*.[7] He said there that to declare illegal an above-cost price cut would be to sacrifice a bird in hand (the price cut) for a speculative bird in the bush (preventing exit and a future price rise).[8] Breyer's "bird-in-hand" view has enormous gravitational pull[9] and suggests that we must beware of interventionist policies.

[7] *Barry Wright Corp. v. ITT Grinnell Corp.*, 724 F.2d 227, 234 (1st Cir. 1983).

[8] Specifically, Breyer wrote "[T]he antitrust laws very rarely reject such beneficial 'birds in hand' for the sake of more speculative (future low-price) 'birds in the bush'".

[9] See Elhauge, "Why Above-Cost Price Cuts To Drive Out Entrants are Not Predatory---and the Implications for Defining Costs and Market Power." Yale Law Journal, Volume 112, No. 4, January 2003, pages 681-827, Sections I.B, IV.E, collecting sources stating that the tradeoff of banning above cost pricing is entails a "certain short-term loss for an uncertain long-term gain."

The bird-in-hand view, however, is simply a fallacy. The important effects of court decisions and legal rules are prospective, which is to say the important effects are future effects on markets and potential cases.

The price cut only happens if and when there is entry and entry is not a bird in hand. In theory, Entry may never occur, and in practice a very permissive rule that allows aggressive price cuts post entry may make entry rare or delayed. If the entrant anticipates being outcompeted or predated post entry, why would it enter? Breyer's "bird in hand" view presumes entry, and thus is just as speculative a proposition as the fear of high prices post exit.

The predatory pricing rule can affect the price before entry, the probability of entry during any given time period, and pricing post entry if there is entry. In reality all effects are more like birds in the bush than birds in hand.

Some will be tempted to doubt this position and wonder how I can deny the fact of the real benefits that have actually occurred in the case under consideration from the price war that precipitated the instant court battle. How can these consumer benefits not be a bird in hand? True, at the time of trial those gains are in fact real, but the trials results will not take them from consumers in any event. The relevant birds are all in prospective cases, not in the present case.

3. Is Predatory Pricing Common? If business folk think so, it is.

Robert Bork concluded that predatory pricing is "a phenomenon that probably does not exist."[10] Professor Frank Easterbrook concurred in 1981, writing that predatory pricing is like "dragons" – everywhere in literature and nowhere in the world.[11] When I presented my 2002 paper at the University of Chicago,[12] it appeared to me that Judge Easterbrook had come to think that predatory pricing might be even more rare than that.[13]

Why so? Why did (and does) the Chicago School of Antitrust see predatory pricing as generally implausible, a claim that ultimately convinced the U.S. Supreme Court to write that "predatory pricing schemes are rarely tried, and even more rarely successful."[14]

Bork reasons thus:

> *A firm contemplating predatory price warfare will perceive a series of obstacles that make the prospect of such a campaign exceedingly unattractive. The losses during the war will be proportionally higher for the predator than for the victim; merger law will make it all but impossible for the predator to purchase the victim, so the campaign will have to last until the victim's organization and assets are dissolved; ease of entry will*

[10] Antirust Paradox, Robert Bork (1978) at 154.

[11] Easterbrook, F. Predatory Strategies and Counterstrategies, *University of Chicago Law Review*, 48 (2), 263-337 (1981). Jonathan Baker says that Chicago adherents either see predation as like a white tiger (if it exists at all) or a unicorn (if it does not). Baker, J., "Predatory Pricing after Brooke Group: An Economic Perspective" 62 Antitrust Law Journal 585 (1984).

[12] Edlin, A., Stopping Above-Cost Predatory Pricing, *The Yale Law Journal*, 111 (4), 941-991 (2002).

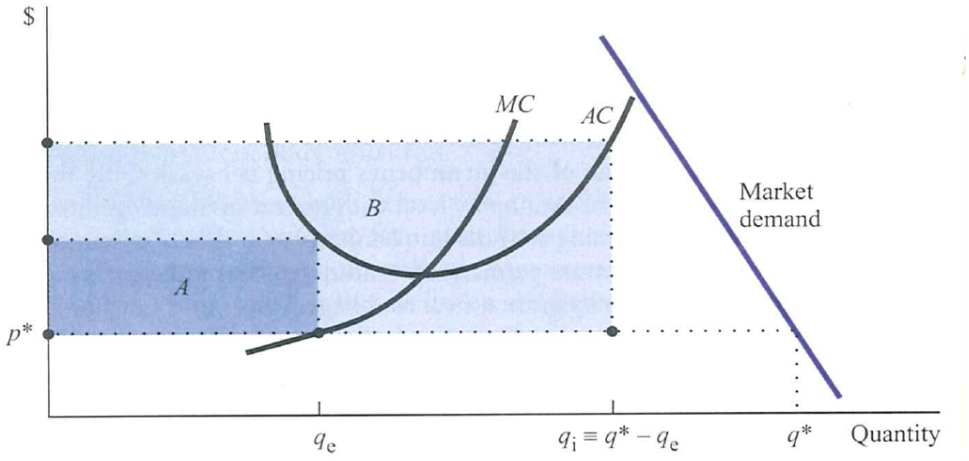
[13] Kenneth Elzinga and David Mills take a slightly more open view comparing successful price predation to an individual scoring over 65 points in a basketball game. Elzinga, K. and D. Mills, Predatory Pricing and Strategic Theory, Georgetown Law Journal, 89 (8), 2475, at 2479 (2001).

[14] *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 589 (1986).

> *be symmetrical with ease of exit; and anticipated monopoly revenues, being deferred, must be discounted at the current interest rate.*

The beginning of the Chicago logic is the idea that the predator's losses during the predatory period will typically be large and larger than the prey. To understand this claim, consider the way the matter is taught to undergraduates in the leading industrial organization textbook written by Professors Dennis Carlton and Jeffrey Perloff.[15] See Figure 1, which is their Figure 11.1. Imagine a market that is big enough for two identical firms to produce at efficient scale as depicted in Figure 1. Can one firm oust the other through predatory pricing? Label the predator-incumbent "i" and the prey-entrant "e". The predation, of course, need not follow entry—it can simply be an effort to end an unsatisfactory sharing of the market.

Figure 1:



[15] Modern Industrial Organization, 2005, Dennis Carlton and Jeffrey Perloff.

The entrant will presumably not consider exit so long as price exceeds the minimum of its average cost. In fact, it should only consider exit if price is below the minimum of its average avoidable costs (AAC), where "avoidable costs" are those that would be avoided by the exit. (As the time to exit expands, presumably more and more costs become avoidable by exit and AAC becomes closer to average total costs.) But in order to drive price to some level p* below AAC, the entrant must expand output enough to keep the price at that level. After all at a price of p* less than the minimum of AC, if the entrant stays in the market, the entrant will reduce its output to some q_e such that $MC(q_e)=p^*$. In order to keep price at p*, the incumbent will need to increase its production to $q_i=q^*- q_e$.

As shown in the figure, the losses for the entrant, the dark shaded area A, are considerably smaller than those for the incumbent, the shaded area B. In fact, even if rectangle A were taller than rectangle B, it must have smaller area because the area of rectangle B equals that of rectangle A plus the extra losses that the incumbent suffers on all units between q_e and q_i (i.e., the area under MC and above p* between q_e and q_i).[16] So during the predatory period, in this example, anyway, the predator loses more per month than the prey.

In general, successful predation requires:

1. **Low prices**; price must be sufficiently low to tempt rivals to exit (generally below AAC) or otherwise to chasten them;

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[16] $B = A + \int_{q_e}^{q_i} \left[MC(q) - p^* \right] dq$.

2. **Credibility**; the threat must be credible that the predator will keep prices low until rivals exit; and

3. **No re-entry**; re-entry or new competition must be sufficiently delayed that the predator can recoup its losses from predation.

Let's begin by focusing on requirements #1 and #2 and assuming for the time being that re-entry will not occur after an exit has been forced.

In order to satisfy condition #1, the market price must be driven below the prey's AAC. If the two firms have symmetric costs as in the example, and the predator's average costs rise with additional output as depicted in the figure, then the predator will lose more than the prey. As Bork, Carlton and Perloff and many others see the matter, this makes it implausible that the predator will continue such behavior.[17] And if it is not plausible that the predator will continue, then the prey will not exit, and if the prey will not exit, the predator will never start, or at least rationally should never start.

Their presumption seems sensible enough: If the predator is losing money by the boatload, shouldn't the prey expect that the predator will give up its foolishness before long? Particularly if the prey makes it clear that it will stick it out, by sticking it out! The logic has its appeal, but then consider that the prey is also losing money, albeit less. And, the predator too may make its own obstinance clear by sticking around.

[17] Carlton and Perloff conclude: "The reason that predatory pricing is unlikely to succeed where firms have identical costs is that the predatory firm suffers greater losses than its intended victim."

In fact, in a game theoretic sense, there are (at least) two equilibria. In the no-predation equilibrium, the prey will persevere (perhaps rationalizing this decision on a comparison of relative losses), no matter how far the game continues, because he always expects that the predator will quit the next moment; the predator's corresponding strategy in this equilibrium is always to quit predation at the next moment no matter how long he has been in the market. If we restrict attention to any particular subgame, these two strategies restricted to the subgame constitute a Nash equilibrium. Hence, these two strategies are a subgame perfect equilibrium of the overall predation game.

But successful predation is also a subgame perfect equilibrium.[18] In that equilibrium, the predator expects the prey to drop out next period if predation continues and so at all points the predator wants to continue predation; correspondingly, the prey expects that the predator will continue indefinitely and so drops out quickly or immediately. These two strategies are just as consistent and sensible as the no-predation equilibrium.

Condition #3 is thought by many to be the real rub. After all, if the predator raises price, won't this simply invite re-entry? Maybe. But this "no re-entry" condition may not be so tough to satisfy. Condition #3 has a certain self-fulfilling character. If predation is known to be generally unsuccessful and implausible, then

[18] This is demonstrated formally in Appendix A of Milgrom, P. and Roberts, J., Predation, Reputation, and Entry Deterrence, *Journal of Economic Theory*, 27 (2), 280-312 (1982). The predation equilibrium can be eliminated if there is a known finite end to the game as in Selten, R. (1978), The Chain Store Paradox, *Theory and Decision*, 9 (2), 127-59, but this possibility is extremely unusual.

if by some stroke of luck, although rarely tried, predation is tried, and if although it rarely succeeds, by luck again it does succeed in inducing exit, the predatory strategy may still be unsuccessful taken as a whole. After all, for full success the predator must not just induce exit, but must also satisfy condition #3. And, if despite this success, entrants are not worried about further predation, the monopoly will be short-lived because the monopoly will invite entry just as a vacuum invites gas.

But, suppose on the other hand that predation is a generally successful strategy. Then, entry (post-predation) would seem foolish, as it will only be met with more predation. In this case, the period of monopoly rents will be long. And, if the recoupment period is long, this return will tend of course to justify a long and large investment in the predatory period, and if a large investment is justified, then a large investment won't even be necessary because the prey will likely get out early, realizing that it won't be fruitful to wait the predator out. Now observe that if the prey gets out early, then the long post-entry period will not only be long, but contrary to Bork's suggestion, also not be delayed, so the discounting that Bork emphasizes becomes relatively inconsequential.

There are two basic points to understand here. The first is that requirements #2 and #3 are not so very different and do not really compound the difficulties of successful predation, contrary to what many suppose.[19] Staying in a market is

[19] At the 70,000 foot level this is an instance of Stiglitz and Dasgupta's principle that "the more competitive ex post competition (competition is after entry) the less effective is the market discipline provided by potential competition. " Stiglitz, JE and P. Dasgupta,

easier and cheaper than entering a market. Hence, if a firm in the market will and does exit in response to predation, no firm with a similar cost structure will enter.

The second point is that the plausibility of predation is much more self-fulfilling that often realized. Starting at the end and reasoning backward, if predation is a plausible strategy, then re-entry will be rare. The recoupment period will be long. It is then credible that the predator will continue its predation long enough to drive the prey out and hence the prey sees no advantage to staying in the market after it begins losing money with respect to its AAC. If the prey will leave quickly and the recoupment period is long, then the predator will rationally persist. And if predation leads to quick exit and long recoupment without re-entry, then when firms consider re-entry this will be unattractive (because they will face predation). Hence, all the assumptions of plausibility are self-fulfilling.

There is a fair bit of stability to the equilibrium of a deep short price cut, followed by quick exit, and a long period without re-entry. Who but a madman, or a firm with extremely low costs, would enter such a market? And with the expectation of a quick exit and long recoupment period, a rational predator is willing to stick to its price cut despite large losses for a long time; after all, the predator in this equilibrium rationally believes that the prey is always hanging on by a thread and likely to leave shortly and without return. The unlikely event that the prey persists in the market for a long period may of course mean the predatory

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Potential Competition, Actual Competition, and Economic Welfare, European Economic Review 566-577 (1988).

strategy turns out to be unprofitable ex post. But it does not mean that the predatory strategy is unprofitable ex ante. After all, this event is unlikely; in the extreme case, it is out of equilibrium and a zero probability event. And, it does not mean that continuing the predatory strategy is unprofitable in conditional expectation from any point in time; quite the contrary, the prey is expected by the predator to exit at any moment and the long period of recoupment is always expected to be very close. In the unlikely or out-of-equilibrium event that the prey persists for a long time in the market, it is only the 20-20 hindsight of the Supreme Court in Matsushita that makes it appear that the predator's strategy was irrational because recoupment was so delayed.[20]

This logic suggests that if predator and prey have consistent expectations, the Bork-Easterbrook view could be right, but it could also be completely wrong. What creates the expectations? Economics offers no solid theory to answer that question. In economic theory, expectations are "read" off the equilibrium; if there are multiple equilibria with different expectations, economics does not have a definite prediction of which will obtain.

Possibly, financial constraints might play a role in defining expectations, as suggested long ago by Telser [1966] and more recently by Bolton and Scharfstein [1990] or by Bolton, Brodley and Riordan [2001].[21] If the prey has capital

[20] Matsushita v. Zenith Radio Corp, 475 U.S. 574 (1986).

[21] Telser, L., Cutthroat Competition and the Long Purse, *Journal of Law & Economics*, 9, 259-277 (1966); Bolton, P., J. Brodley and M. Riordan, Predatory Pricing: Strategic Theory and Legal Policy, *Georgetown Law Journal*, 88 (8), 2239-2330 (2000); Bolton, P. and D. Scharfstein, A Theory of Predation Based on Agency Problems in Financial Contracting, *The American Economic Review*, 80 (1), 93-106 (1990).

constraints, one might think that it cannot persist for long. Perhaps the predatory equilibrium is more likely then. It is tempting, then, to imagine that a predatory equilibrium will be more plausible when a large firm prey's on a small firm (though this effect may be offset if the predator's losses exceed the prey's).

We have seen that the home-run point about the relative losses of predator and prey is not such a home run despite its intuitive appeal. Whether predation is a successful strategy depends very much on whether predator and prey believe it is a successful strategy. Only if the Bork-Easterbrook skepticism is as contagious among business people as it has been amoung courts and in academe will predation be like dragons. If business people read Supreme Court opinions, perhaps the skepticism of *Matsushita* and *Brooke Group* would produce a world in which that skepticism were fully justified. Few, however, do.[22]

4. Asymmetric Information and Asymmetric Fundamentals.

Thus far, I have argued that predation is plausible even in the world of symmetric costs and symmetric information in which the Chicago attacks seem strongest. The main stream of literature on predation, however, took a different tact. The progress of Chicago School skepticism lead to a wave of critiques in the 1980s by many of the greatest names in economics such as Drew Fudenberg, David Kreps,

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[22] *See generally Matsushita Elec. Indus. Co. v. Zenith Radio Corp.,* 475 U.S. 574, 589 (1986); *see also Brooke Group Ltd. v. Brown & Williamson Tobacco Corp*., 509 U.S. 209 (1993). .

Paul Milgrom, John Roberts, Steven Salop, Jean Tirole, and Robert Wilson.[23] They pointed out that if firms have asymmetric fundamentals (e.g., cost of production or finance or discounting) and asymmetric information about these costs, then predation makes perfect sense in that a firm with high cost may cut price in an effort to convince entrants that it has low costs and that they should therefore exit.[24] It turns out that even without asymmetric information, asymmetric fundamentals by themselves, at least if they entail incumbent advantages, can make it more likely that incumbent price cuts are socially undesirable.

4.1. Asymmetric Information Models of Predation

Suppose that incumbents come in two types – low cost and high cost – and entrants or rivals cannot directly observe which is which. For the low-cost firms fighting entry is short-term optimal and for the high-cost firms accommodation is short-term optimal. Rivals lose money if they face a firm that fights, but otherwise make money. For the high-cost incumbents fighting is only optimal if it induces exit or deters further entry. Will the high-cost incumbents predate, thereby sacrificing short-run returns to induce exit or to discourage others from entry?

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[23] Salop, SC, Strategic Entry Deterrence, American Economic Review, Vol. 69 p. 335 (1979). Milgrom, P. and J. Roberts, Predation, Reputation, and Entry Deterrence, *Journal of Economic Theory*, 27 (2), 280-312 (1982). Roberts, J., A Signaling Model of Predatory Pricing, *Oxford Economic Papers, New Series*, 38 (supp.), 75-93 (1986). Fudenberg, D. and J. Tirole (1986), A "Signal-Jamming" Theory of Predation, *The RAND Journal of Economics*, 17 (3), 366-376. Kreps, D. and R. Wilson, Reputation and Imperfect Information, *Journal of Economic Theory*, 27 (2), 253-79 (1982)

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[24] Ordover and Saloner [1989] provide an excellent review of these asymmetric information models.

If information were symmetric and the game ended tomorrow, then incumbents would not predate today because regardless of what they do today, rivals know that tomorrow they will accommodate (Selten showed that a similar backward reasoning applies to games of arbitrary length as long as the parties know when they will end).[25] However, if rivals must infer the incumbents' costs from their behavior, then some of the high-cost firms will surely fight in any equilibrium. How do we know? Simple. If none did, so that all fighters have low cost, then by fighting even a high cost firm can make others believe it to be low cost, which by assumption will induce exit or deter entry. Thus the equilibrium involves some high-cost firms fighting even though they lose money in the short-run by doing so. If the game is long, then the proportion fighting can grow toward one. Fast reactions are, of course, equivalent to a long game with low discount rates, so when reactions can be fast, predation becomes very likely.

4.2. Asymmetric Fundamentals Models of Predation

Edlin [2002] has argued that even if information is symmetric, asymmetric fundamentals, like cost or product quality, allow an incumbent with advantages to predate on disadvantaged entrants and drive them from the market. Unlike the arguments in section 2, and like the arguments above, Edlin's [2002] arguments apply in both finite and infinite horizons.

Consider, as Edlin [2002] suggests, a monopoly incumbent charging a high price H. The monopoly is known to have low costs L. Will a potential rival with

[25] Selten, R., The Chain Store Paradox, *Theory and Decision*, 9 (2), 127-59 (1978).

costs M between L and H enter the market? Not if the monopoly will respond with the price just under M (or equivalently beat whatever price the entrant charges). The capacity to cut price from H to M after entry allows the monopoly to charge H forever without fear of entry. Or, if the rival firm is already in the market, the monopoly can drive it from the market and raise price to H without fear of re-entry.

This straightforward competition problem is likely to be endemic. After all, it is common that an incumbent monopoly has cost or other advantages over rivals considering entry. If not for some advantage how else did the firm come to be or to retain a monopoly? (Well, predation is one possible answer, but surely advantages are another and indeed a complementary one). A monopoly may have lower costs due to fortuity, ingeniousness, or increasing returns. Its products could enjoy a quality advantage due to network externalities[26] or simply superior production; such quality advantages can roughly be thought of as cost advantages. At the very least, there is frequently a "switching cost" that buyers incur if they switch suppliers; such a cost will give the monopoly an advantage at keeping customers – at a minimum, if the entrant charges the same price as the monopoly it should expect very little if any business (even though in the "standard" model, it would get half the market).

In general, then, the canonical model of a monopoly and entrant should probably not have identical costs but assume at least that (most) potential entrants have higher costs or some other disadvantage. As a result, the incumbent may be

[26] Farrell, Joseph and Michael Katz, Competition or predation? Consumer coordination, strategic pricing and price floors in network markets. Journal of Industrial Economics, 53, 203-31(1986).

able to force entrants to exit the market without incurring losses at all. Such "above-cost predation" may even be profit maximizing in the short run; it will be profit maximizing in the short run if the firms have constant marginal costs and sell identical products.

Once one thinks of predation as including price matching or price beating by a monopoly that succeeds in significantly limiting entry, it becomes evident that such pricing patterns are roughly as common as entry in monopoly and nothing like dragons. Perhaps the Easterbrook-Bork vision of below-cost predation is like dragons (though the discussion in section 1 may lead one to doubt it); but above-cost predation of the Edlin [2002]-ilk is not.

There is a question in the minds of many (and of the courts) about whether above-cost pricing can be termed predatory at all, but if not, choose another word and call it "anticompetitive" above-cost pricing. As Professor Einer Elhauge points out, to *define* predation as entailing below-cost pricing rather than *arguing* that only below-cost pricing is worthy of concern is a cheap rhetorical ploy with no fundamental import.[27]

To sum up, even if one believes the expectational assumptions that make predation rare in the case of symmetric costs, symmetric information, decreasing returns to scale, and no switching costs, once one deviates from these assumptions, one moves from thinking that price cuts can sometimes be anticompetitive to thinking that they frequently can be.

[27] Elhauge [2003] at 698-99 (Writing that "[o]ne unfortunate tendency has been to declare victory by definition---asserting that a "predatory" price must be below cost or that low above-cost prices involve 'competition on the merits'").

5. The Empirical Evidence on Predatory Pricing.

What is the empirical evidence on predatory pricing? It depends a great deal of course on how we define predatory pricing. Thus, Elzinga (1970) did not find predatory pricing in the gunpowder trust, defining predatory pricing as below marginal-cost pricing. Yet, Zerbe and Mumford found it in 5 of 11 cases by including above marginal-cost pricing intended to drive a rival from business or to induce a rival to join a cartel.

Elzinga and Mills (2001) see no evidence of successful predation by General Foods in the 1970s to protect its Maxwell House coffee in the eastern United States from the incursion of Proctor & Gamble's Folgers coffee, which was the most popular brand in the West.[28] They emphasize in particular that the price cuts of General Foods did not in the end stop Folgers from moving east and becoming a national brand. Patrick Bolton, Joseph Brodley and Michael Riordan, on the other hand, argue that it is plausible that General Foods successfully engaged in test-market predation: success was measured by Folgers delaying its entry for 7-8 years; they suggest that this delay of competition in the East is an important harm to be considered.[29]

Most empirical studies are case studies that attempt to tease out of observed data what firms were trying to do and what they in fact did do. David Bunch and

[28] *See In re General Foods*, 103 F.T.C. 204 (1984); *see* Kenneth G. Elzinga & David E. Mills, Predatory Pricing and Strategic Theory, 89 Geo. L. J. 2475 (2001).

[29] Bolton, P., J. Brodley and M. Riordan, Predatory Pricing: Strategic Theory and Legal Policy, 88 *Geo. L. Journal* 2239 (2000).

Robert Smiley take a different approach.[30] They survey managers and ask how frequently those in their industry engage in a variety of practices to deter entry. One striking finding is that limit pricing is the most rare of the surveyed strategies. Interestingly these authors do not survey firms about deterring future entry by predatory pricing in response to current entry (they do survey about "giving the impression through media" that entrants will be greeted with "especially rigorous" competition). Capacity expansion tends to be used more when incumbents are larger and when the cost disadvantage to being small is greater, according to Bunch and Smiley.[31]

Burns (1986,1989) found that American Tobacco was able to purchase rivals at lower prices after predation as would be expected in a reputation model and contrary to McGee's (1960) early arguments that merger was a substitute (and superior) strategy to predation. Scott Morton (1997) found that when newer or smaller entrants faced off with the British shipping conference they were more likely than larger firms to confront a price war and be driven from the market. This is consistent with Telser's long purse theory. Genesove and Mullin (2006) have provided evidence of successful below-cost predation in the sugar industry in the early twentieth century. An excellent and extensive literature survey has been written by Bruce Kabayashi; a pithier one is found in Kaplow and Shapiro.[32] Chris

[30] Bunch, David and Robert Smiley, "What Deters Entry? Evidence on the Use of Strategic Entry Deterrents," Review of Economics and Statistics, , 509-521 (1992)

[31] *Id*. at 517.

[32] Bruce Kobayashi, "The Law and Economics of Predatory Pricing" in Antitrust Law and Economics, ed. By Keith N. Hylton. Forthcoming Edward Elgar. Kaplow, Louis and Carl Shapiro,

Sagers has surveyed all available information on airline price predation and concludes "that predation not only occurs in airline markets, but has been a key tool to preserve market power held by the surviving legacy carriers."[33]

What is learned from this empirical evidence? Even if one takes a narrow view of predatory pricing and considers only below cost pricing as candidates for predation, the view that predation is as rare as dragons is not born of the empirical evidence. If you hold that view strongly as a prior,[34] then it is possible that papers such as Genesove and Mullin won't sway you much. On the other hand, you shouldn't expect to cite Koller (1971), McGee (1960, 1980) and Easterbrook (1981) as the Supreme Court did in its *Matsushita* ruling and convince someone that predation never occurs if that some one is predisposed to think predation possible.[35]

If one expands one's view of predation to include cases where a monopoly drives out entrants and deters future entry to the detriment of consumers, then the frequency of predation surely goes up, but the empirical literature does not tell us how much.

"Antitrust", Handbook of Law and Economics, Volume 2, Edited by A. Mitchell Polinsky and Steven Shavell, 2007.

[33] Christopher Sagers, 74 J. Air L. & Com. 919 (2009) ("'Rarely tried, and …rarely successful:' Theoretically impossible Price Predation Among the Airlines.").

[34] By a "prior," I mean a belief held prior to reviewing the empirical evidence. Bayesian statisticians speak of this prior belief and the posterior belief resulting from updating the prior in light of the evidence.

[35] *See Matsushita*, 475 U.S. at 589.

6. Tests, Standards, and Rationales

I have argued that the Chicago School's skepticism about the existence of predatory pricing was unfounded,[36] particularly if one considers above-cost predation. Left unanswered is what if anything should be done? In particular, what should be the legal standard of illegal pricing?

The Supreme Court in the United States (at least in oligopoly markets) endorses a test of predatory pricing requiring proof that the predator prices below its cost and that it has either a reasonable prospect or probability of recouping the losses from so doing.[37] In contrast, the European Union has found abuse of dominance when above-cost price cuts were intended to drive rivals from the market.[38] The U.S. Supreme Court pays at least lip service to the idea that above-cost price cuts can be undesirable but says they are "beyond the practical ability of a

[36] Of course this skepticism itself has two strands: one is a theoretical contention that low prices harmful to competition is rare or nonexistent, and the other is that little can be done about it without doing more harm than good. So far, I have tackled only the theoretical claim.

[37] Most commentators assume that *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209 (1993) applies equally to oligopolies and monopolies. On the other hand, Edlin [2002] and later the court in *LePage's, Inc. v. 3M*, 324 F.3d 141 (3rd Cir. 2003) found that the *Brooke Group* precedent may not be applicable to monopolies. "[n]othing in the decision suggests that its discussion of the issue is applicable to a monopolist with its unconstrained market power." *Lepage's*, 324 F.3d at 151. Unfortunately, Weyerhauser v. Ross-Simmons Hardwood Lumber 127 S. Ct. 1069 (2007) probably puts an end to such arguments as it extended the Brooke Group rule to the case of monopsony.

[38] Key cases in this line include AKZO, Compagnie Maritime (known as Cewal), and Irish Sugar. Case C-62/86, AKZO Chemie BV v. Commission, 1991 E.C.R. I-3359 ¶¶ 70-73 (E.C.J. (holding that above variable cost but below total cost pricing is illegal if intended to eliminate a competitor). See also Joined Cases T-24/93, T-25/93, T-26/93 & T-28/93, Compagnie Maritime Belge Transps. SA v. Commission, 1996 E.C.R. II-1201 ¶¶ 138-153 (Ct. First Instance); aff'd by Joined Cases C-395/96 P & C-396/96 P, Compagnie Maritime Belge Transps. SA v. Commission, 2000 E.C.R. I-1365 ¶¶ 117-120 (E.C.J.) (European Court of Justice affirming that selective above-cost price cuts to meet an entrant were illegal when a firm with over 90% market share has purpose of eliminating entrant.) Case T-228/97, Irish Sugar PLC v. Commission, 1999 E.C.R. II-2969 ¶¶ 173-193 (Ct. First Instance), aff'd on other grounds, C-497/99 P, 2001 E.C.R. I-5333 (E.C.J.)

judicial tribunal to control without courting intolerable risks of chilling legitimate price-cutting."[39]

The connection between restricting attention to below-cost price cuts and the goal of protecting consumer welfare is indirect and somewhat loose. One idea (Breyer's bird in hand) is that price cuts benefit consumers and so we should be loathe to condemn them. Another would be that in the long run, low costs drive low prices and so we should be alert (only) to firms who may drive lower cost rivals from the market.

The cost-based tests used in the U.S. present many implementation issues. Costs are notoriously difficult to measure, and once one begins measuring them, one immediately discovers that they come in many varieties: short-run marginal cost, long-run marginal cost, average variable cost, average avoidable cost, average incremental cost, and more. If the test for predation involves pricing below cost, what measure of cost is the right one to use? The U.S. Supreme Court has said that price should be compared with the *appropriate* level of cost, but declined to decide what measure was appropriate.[40]

One can't really consider what the appropriate level of cost is without explaining first why one is comparing price with cost to ferret out predation. Here I distinguished two cost-based rationales, and take each in turn: sacrifice rationales and excluding equally efficient competitor rationales. Oddly, American courts say at

[39] *Brooke Group*, 509 U.S. at 223.

[40] *Brooke Group*, 509 U.S. at 211 n.1 ("… we again decline to resolve the conflict among the lower courts over the appropriate measure of cost.").

various times that they are about either or both and rarely seem to discern that they are different.

After I discuss the two traditional rationales and the test each implies, I introduce a consumer betterment standard. This standard is more closely related to protecting consumer welfare than the two traditional standards, which either protect equally efficient competitors or prevent profit sacrifice.

6.1. The Sacrifice Standard.

Sacrifice theories observe that if a price is below cost, this reflects a sacrifice, and sacrifice raises the question—"what for?" One possible answer is that the sacrifice was suffered "to exclude competition," and if this is the answer, then an antitrust problem emerges. Under sacrifice theories of predation, the cost (and price) definition should be geared to identify sacrifice.

Areeda and Turner [1975] is the usual point of departure for sacrifice tests.[41] Their theory is premised on the observation that in perfectly competitive markets, price equals short-run marginal cost, and so if, and only if, prices are below that level, does the question "what for?" emerge. Thus, the *AMR* ("American Airlines") court writes, following *Advo* that "the ideal measure of cost would be marginal cost

[41] Areeda, P. and D. Turner, Predatory Pricing and Related Practices under Section 2 of the Sherman Act, *Harvard Law Review*, 88 (4), 697-733 (1975).

because '[a]s long as a firm's prices exceeded its marginal cost, each additional sale decreases losses or increases profits'."[42]

Others such as Ordover and Willig (1981) followed at least this much of the Areeda-Turner logic: if a firm undertakes actions that it would not undertake absent the effects of its action on reducing future competition, then the action is anticompetitive (but otherwise not). The Ordover-Willig definition urges that proving predation entails demonstrating first a short-run profit sacrifice and second that recouping the sacrifice is only possible due to reductions in competition.[43] With some modification of rationale, this logic developed into the two-pronged Brooke Group test (prong #1, P<C; prong #2, recoupment).[44]

What measures of cost and of price does a sacrifice theory suggest? Areeda and Turner, Ordover and Willig, and the courts in *AMR* and *Advo* advocate comparing price with marginal cost (MC) at least when possible. And, indeed output expansions when p<MC do involve a sacrifice.

But does P>MC imply lack of sacrifice? If MC were the dividing line between sacrifice and lack of sacrifice, then the test would be unbiased. However, contrary to the assumption of the *AMR* court and the *Advo* court, P>MC is quite consistent with

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[42] *U.S. v. AMR*, 335 F.3d 1109 1116 (10th Cir. 2003) quoting *Advo, Inc. v. Phila. Newspapers, Inc.*, 51 F.3d 1191, 1198 (3d Cir. 1995).

[43] For a critique of the idea that profit sacrifice is necessary for an antitrust violation, see Salop, Steven, "Exclusionary Conduct, Effect on Consumers, and the Flawed Profit-Sacrifice Standard," 73 Antitrust L.J. 311-374 (2006). Jonathan Baker also discusses critiques of profit sacrifice in "Preserving a Political Bargain: The Political Economy of the Non-Interventionist Challenge to Monopolization Enforcement," forthcoming in Antitrust Law Journal.

[44] *Brooke Group*, 509 U.S. at 226 citing Elzinga, Kenneth and David Mills, "Testing for Predation: Is Recoupment Feasible?" 34 Antitrust Bulletin 869 (Winter 1989); Hemphill, C. S. (2001), The Role of Recoupment in Predatory Pricing Analyses, *Stanford Law Review*, 53 (6), 1581-1612 (providing a particularly insightful analysis of recoupment).

sacrifice, as these terms are used in basic microeconomics texts. A price above marginal cost does not mean that an additional sale "decreases losses or increases profits".[45]

Additional sales generally require lowering prices on all goods sold not just on the additional sales. As a result, marginal revenue – defined as the revenue from an additional sale – is almost always below price for firms that charge uniform prices. Only in idealized perfectly competitive markets can a firm increase output without lowering price, and such markets are pretty irrelevant to the contexts of antitrust (monopoly and market power). The more market power a firm has, all else equal, the greater will be the excess of price over marginal revenue.

Here are two simple ways to frame a price-cost comparison as a necessary and sufficient test of sacrifice, which appears (sometimes) to be what the *AMR* court sought. Suppose that Dell sells one million computers each year for $1,000 each, and pays $900 to produce each computer. To sell 1,000,001 computers it must lower price by one cent to $999.99. One cost of selling the extra computer is lowering price on one million computers by one cent each, which cost amounts to $10,000 in lost revenue. As a result, even though the last computer sells for $999.99 and this "price" exceeds the production cost of $900, the sale involves an enormous sacrifice. Profits fall because

$999.99<$10,900.

[45] *See AMR* 335 F. 3d at 1116; *see also Advo,* 51 F.3d at 1198.

The real full cost of selling the extra computer is actually $10,900. The *Advo* assertion holds true only if marginal cost includes the cost of losing $10,000 of revenue on the first million computers.[46] Unlike the "production" measure of marginal cost, this "inclusive" definition of marginal cost can be compared to price to yield an unbiased measure of sacrifice. (I here introduce and utilize the terminology "inclusive" and "exclusive" which is inspired by the tax literature where prices are referred to as being tax-inclusive or tax-exclusive).

There is another way to think about the matter, which is to reconceptualize price and not see price as $999.99. Economists speak of marginal revenue ("MR"), which is the increment to revenue from the last sale. In this case, marginal revenue is negative. It is:

MR=$999.99 - $10,000 = -$9,000.01

Extra output involves sacrifice if and only if MR<MC. Marginal revenue can be seen as an inclusive notion of price. It includes revenue effects. The alternative way to measure sacrifice is to talk about an inclusive notion of revenue that includes the lost revenue on inframarginal units, an inclusive notion of price can be compared to the exclusive production cost of $900. In this example, as -9,000.01<$900.00, MR<MC, and the output increase is unprofitable.

The Justice Department *implicitly* put forward these inclusive definitions of price (or maybe cost) in the *AMR* case.[47] AMR had added a number of planes to a

[46] This example is a variant of one in Phillip Areeda, Louis Kaplow and Aaron Edlin, Antitrust Analysis: Problems, Text and Cases, 6th ed. 2004, p. 478-79.

[47] Oddly, the Department of Justice briefs in *AMR* were not straightforward in explaining the difference between inclusive and exclusive notions of price and cost. The briefs embrace Areeda-

route. The DOJ compared incremental revenue to incremental cost, where the "increment" was the additional flights. In a sense the price at which AMR was selling the extra flights was the amount by which its revenues increased (i.e., incremental revenue) rather than say the sum of ticket prices of passengers who traveled on the extra flights. There are at least two problems with simply counting the ticket prices on the extra flights: first, that would count revenue even if the only thing that happened was that passengers switched from existing American flights to the new ones, and second it would not account for the full impact (on existing flights) of any overall price decreases that American made to fill its expanded schedule of flights. With this inclusive definition of price as incremental revenue the DOJ proved a sacrifice. There is a strong sense in which the price at which American sold these extra flights equals the incremental revenue of adding them and not the narrow and exclusive measure of the revenues from tickets on the flights.

The district and appellate courts, however, did not accept these inclusive notions in *AMR*. The appellate court objected, using an example drawn from Elhauge, that the DOJ test "effectively treats foregone or 'sacrificed' profits as costs, and condemns activity that may have been profitable as predatory."[48] The Elhauge example involves an airline that adds a flight with direct costs of $500,000. Passengers on that flight purchase $1,000,000 of tickets, but the revenue of the rest of the route falls by $600,000 so that the net incremental revenue is $400,000.[49]

Turner who probably had in mind comparing exclusive measures of price and cost, but then proceeded to implement tests that used inclusive measures of one or the other.

[48] *AMR*, 335 F.3d at 1118 n. 13.

[49] Elhauge [2003,694]; *AMR*, 335 F.3d at 1118 n. 13.

Adding the flight lowers profits by $100,000 and involves a profit sacrifice. How then does the court come to view the added flight as profitable? It does so by comparing the $1,000,000 exclusive price on the incremental capacity to its $500,000 exclusive cost. Elhauge objects to the inclusive notions of cost or price saying "it is vital for analytical clarity to avoid using cost measures that effectively include forgone 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."[50]

Why though should one want to keep predatory theories based on profit sacrifice[51] analytically distinct from theories based on pricing below cost? One of the central rationales for price-cost tests is that pricing below cost indicates short-run profit sacrifice and that sacrifice may indicate anticompetitive exclusionary activity. In defense of Elhauge here, his statement makes perfect sense if one views price-cost tests as the exclusive domain of equally efficient competitor standards rather than sacrifice standards. His point becomes one of truth in advertising, which is that price-cost tests do not measure profit-sacrifice so one should distinguish profit sacrifice tests from price-cost tests. My objection to that truth-in-advertising point is that for better or worse, price-cost tests have been adopted by courts at

[50] Elhauge [2003,694].

[51] Here I have substituted the words "profit sacrifice" for Elhauge's "failure to maximize short-run profits" because the latter may be a more inclusive term and because (to the extent that profit sacrifice and failure to maximize profits differ) profit sacrifice is the concept central to predation analysis. The Department of Justice distinguished between sacrifice theories and failure to maximize short-term profits theories by pointing out that its efforts to identify (large) profit sacrifices from adding incremental capacity in response to entry are different than obligating a firm to always maximize profits. The Department of Justice would not, for example, have argued that a firm that priced low in the first place before entry was unlawfully excluding competition because it failed to maximize short-run or long-run profits.

least in part to identify profit sacrifice and if price or cost is measured inclusively then the tests can do so admirably. What I think is clearly false advertising is to use exclusive measures of price and cost in an effort to measure sacrifice.

Additional output involves a sacrifice if and only if marginal revenue is less than marginal cost. Comparing exclusive notions of price to exclusive notions of marginal cost gives a free pass to sacrifices that are not too great. Counterproductively, bigger free passes are handed out to firms with greater market power because for them the wedge between marginal revenue and price is greater. In fact the free pass can be huge: in the example above, the goods were sold when the loss from so doing was ten times the price.

To the extent that one is trying to measure the intent to limit the competition from rivals --- and to the extent that short-term sacrifice is seen as a useful signal of such intent – comparing marginal revenue with marginal cost is a more accurate test of sacrifice than comparing exclusive notions of price with exclusive notions of marginal cost or price with average variable cost.

Saying that marginal (or incremental) cost should when possible be compared to marginal (or incremental) revenue to identify sacrifice, does not transparently answer all questions of course. The following application is more subtle. Consider two-sided markets in which types A and types B are simultaneously served by a "market-maker" and the service consists of intermediation between A's and B's. Examples abound: a nightclub serves and matches men and women; credit card networks simultaneously serve customers

and merchants; and an academic journal serves readers and authors. In fact any distributor of goods or reseller can be thought to provide its distribution services both to suppliers and customers -- ultimately it matches them together.

Suppose the immediate cost of serving A is X and the market maker sells to A at p<X. Is the price below the "appropriate" measure of cost? Not necessarily. It sells below the exclusive cost, but not necessarily the inclusive cost. The inclusive cost is less than X because by serving A the market maker gets a higher price from B, or sells to more B's. Such an adjustment seems necessary. (some readers should be careful before following me down this garden path, however, as I don't see how they could consistently admit these adjustments and not admit the inclusive adjustments in *AMR* that Elhauge and the *AMR* courts eschew).

If the inclusive adjustment isn't allowed, on what grounds? In what fundamental sense can we say that X is the cost of serving A? The servicing of A can be viewed as an input to the service of B; perhaps A should be being paid and not paying. Is the processing of my credit card payments a service to me or to the merchant network of Visa who wants my business?

There are of course innumerable subtle issues involved in determining profit sacrifice. The main point here is that to measure profit sacrifice in an unbiased way using a price-cost test requires using either an inclusive notion of marginal or incremental cost or an inclusive notion of price that amounts to marginal or incremental revenue.

6.2. Equally efficient competitor standard

A second strand of thinking asserts that we should only be concerned about price predation when such pricing excludes equally or more efficient competitors. To achieve this end with a price-cost test, "price" and "cost" should be defined with an eye to ensure as much as possible that prices above cost are too high to exclude equally efficient competitors, but that prices below cost threaten to do so.

Hence, Baumol and Posner come to favor an average variable cost test not as an approximation for marginal cost like the Areeda-Turner school, but rather as the *right* test. They recast it as an average avoidable cost test, where "avoidable costs" are those that would be avoided if the firm did not make the challenged increment of output—some would call this the average incremental cost test. (NB: If one challenges the last unit of output, this test converges to the Areeda-Turner marginal-cost test but with an exclusive measure of cost and price).

If a firm prices below average avoidable cost, then the firm may exclude a rival who could more efficiently produce the allegedly predatory increment of output. Prices above average avoidable cost can, they would argue, only exclude less efficient entrants because if an entrant were equally or more efficient in the sense of having lower avoidable cost on the output increment, presumably that entrant could win the business when competing against a price above its cost.[52]

[52] This proposition has an undeniable strength, though it is not as self evident in practice as it is in theory. In the typical theoretical model, an equally good product at a lower price captures the whole market. In practice, an entrant whose products are unknown may find itself selling little without (and sometimes even with) extraordinary marketing and sales expenses. There is a sense in which this entrant is less efficient in that its products won't sell without these marketing and sales

Thus the standard of Baumol and Posner is "the equally efficient competitor standard".[53] Prices that exclude an equally or more efficient competitor are predatory. Prices that don't are not. Elhauge argues for the equally efficient competitor standard for predatory pricing (but importantly not for other monopolization[54]) based on welfare effects, not as an axiom. Indeed, Elhauge concludes that "'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."[55] Thus, if in some instance average avoidable cost did not do the trick and allowed an above-cost price to drive out an equally efficient firm, Elhauge would define "cost" as whatever higher cost measure precluded this result.

The U.S. Supreme Court has at times embraced this focus on the relative efficiency of excluded firms, at least in dicta. For example, in *Brooke Group*, the court makes a statement that could be interpreted as implicitly defining competition on the merits as excluding those who are less efficient and only those who are less efficient.[56] This is certainly one view of "the merits". It describes productive merits.

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expenditures. Or, one might say that its products are not truly equally good because one aspect of a product is being known.

[53] Posner, R. (2002, 194-95), Economic Analysis of Law, 6th Ed., Aspen Publishers. Baumol, W. (1996), Predation and the Logic of the Average Variable Cost Test, *Journal of Law & Economics*, 39 (1), 49-72

[54] For example, Elhauge rejects the standard in the case of loyalty discounts: See, "Tying, Bundled Discounts, and the Death of the Single Monopoly Profit Theory, p. 67. Available at http://www.law.harvard.edu/faculty/elhauge/pdf/Elhauge_629_Revised2.pdf.

[55] *Id*. at 689.

[56] The Court writes that "As a general rule, the exclusionary effect of prices above a relevant measure of cost either reflects the lower cost structure of the alleged predator, and so represents competition on the merits, or is beyond the practical ability of a judicial tribunal to control without courting intolerable risks of chilling legitimate price-cutting." At Brooke Group 113 S.Ct. 2578 at 2588. A recent OECD suggests on the other hand that there is no consensus on the meaning of Competition on the Merits. http://www.oecd.org/dataoecd/10/27/37082099.pdf.

The average avoidable cost test raises many issues in application. Consider that American Airlines moves an aircraft from a profitable route in New York to add to its allegedly predatory campaign on the Dallas to Wichita route. Using the aircraft on the Wichita route is avoidable, but what is its cost? Is the lost net income on the New York route a cost? It is certainly what economists call an opportunity cost. In fact, if consumers on the New York route lost consumer surplus one might argue that too should be counted in a true equally efficient competitor test (it is a social opportunity cost). Remarkably, the court in *AMR* was unreceptive to seeing aircraft costs as includable in any fashion.[57] In contrast, even the defendant's expert in *Spirit v. Northwest* wanted to include the lost profits on other routes as the cost of an extra aircraft on the predatory route.[58]

Fixed costs present a vexing issue in predation cases. Costs that are truly fixed in that they don't vary with the increment in question are not avoidable. That said, it is all too easy for a court or an economic expert to assume that a great many costs like rent (or aircraft ownership costs) are fixed particularly when a company's accountants label them as such. However, as businesses grow the amount of money

[57] *See AMR*,.335 F.3d at 1119 note 12 approving of the district court's conclusion that "VAUDNC-AC overstates short-run cost because it includes fixed, unavoidable aircraft-ownership costs."

[58] *Spirit Airlines, Inc. v. Northwest Airlines, Inc*., 431 F.3d 917, 925 (6th Cir. 2005). To include only lost profits (and not lost consumer surplus) on the other route actually misses the point if one is asking about the total economic avoidable cost of shifting the extra airline to the predatory route. If on the other hand, one is trying to implement a sacrifice test, then these forgone profits are the relevant measure. Indeed, for similar reasons, if one is trying to identify sacrifice, then the foregone profits on the existing, (pre-expansionary) flights on the predatory route would also be relevant as discussed in section 5.1. Oddly, many would take the position as the defendant's expert in Spirit did that the relevant cost measure would include one forgone profit and yet not the other.

that they spend on what accountants label as fixed costs grow as well, suggesting that these costs are not actually fixed in the long run.

Are these costs fixed in the short run? They may be, at least in a sense. Thus, it is understandable that the district and appellate courts in *AMR* objected to including costs such as "dispatch, city ticket offices, certain station expenses, certain maintenance expenses, American's flight academy, flight simulator maintenance, general sales and advertising."[59] The court's exclusion of these costs as unavoidable is plausible but not as compelling as the court thought. There are many hidden costs in the use of facilities, whether a city ticket office or a flight simulator. Use of facilities can create crowding and waiting costs. If employees work harder than usual until new employees are hired, there may be a morale cost. One might argue that the reason new employees are hired or larger facilities are purchased is because those decisions are cheaper than the alternatives of continuing to bear crowding, morale or other like costs.[60] Once one delves into the details, cost measurement becomes ever murkier unfortunately.

6.3. The consumer betterment standard

An alternative view of competition on the merits which derives from my ongoing joint work with Joseph Farrell would focus not on the productive merits of

[59] *AMR Corp*. 335 F.3d at 1117 (2003).

[60] I am grateful to my coauthor Joseph Farrell for teaching me this. We discuss it in "The American Airlines Case: A Chance to Clarify Predation Policy," Aaron Edlin and Joseph Farrell, in *The Antitrust Revolution*, Oxford University Press, 3rd ed. By John Kwoka and Lawrence White, 2003.

a firm but on the merits of the offer it makes to customers. Thus, while Posner and Baumol see monopolization where a

> *challenged practice is likely in the circumstances to exclude from the defendant's market an equally or more efficient competitor; (equally efficient competitor standard)*[61]

I propose seeing monopolization where a

> *challenged practice is likely in the circumstances to exclude from the defendant's market a competitor who would provide consumers a better deal than they get from the monopoly. (consumer betterment standard).*[62]

The Posner-Baumol standard focuses on production efficiency, asking: is a cheaper producer excluded from the market? The consumer betterment standard focuses on increases in consumer surplus, asking: is a better deal for consumers excluded from the market. The better deal might be a lower price or higher quality. This approach flows fairly directly from the view espoused by the U.S. Supreme Court that antitrust is intended to protect consumer welfare.[63] As such, focusing directly on consumer betterment for monopolization generally or predatory pricing

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[61] Quote is from Posner, R. (2002, 194-95), Economic Analysis of Law, 6th Ed., Aspen Publishers. Baumol, W. (1996), Predation and the Logic of the Average Variable Cost Test, *Journal of Law & Economics*, 39 (1), 49-72.

[62] I call this a consumer betterment standard (as opposed to Consumer Welfare) because it is a process standard that indicates anticompetitive exclusion and need not require a final welfare analysis.

[63] *Reiter v. Sonotone Corp*., 442 U.S. 330, 342 (1979); *see also* "Statement of Commissioners Harbour, Leibowitz and Rosch on the Issuance of the Section 2 Report by the Department of Justice," Federal Trade Commission, Sept, 2008; Lande, R.H. *Proving the Obvious: The Antitrust Laws Were Passed to Protect Consumers (not Just to Increase Efficiency)*, 50 Hastings L.R. 959, 963-66 (1999) ("citing over twenty scholars who agree with the wealth transfer thesis"); Lande, R.H. Wealth Transfers (Not Just Efficiency) Should Guide Antitrust, 58 Antitrust Law Journal 631, n. 27 (1989); and Lande, R.H., Wealth Transfers as the Original and Primary Concern of Antitrust: The Efficiency Interpretation Challenged, 32 Hastings L. J. 67-106 (1982). See also the Court's rationale for the recoupment requirement in Brook Group that although below-cost pricing is inefficient, it is a "boon to consumers" if prices don't rise later (recoupment). ("Without [recoupment], predatory pricing produces lower aggregate prices in the market, and consumer welfare is enhanced. Although unsuccessful predatory pricing may encourage some inefficient substitution toward the product being sold at less than its cost, unsuccessful predation is in general a boon to consumers" Brook Group 509 U.S. 209, at 224.)

specifically flows naturally in the river of antitrust. In fact it seems odd that the main stream of monopolization thinking interprets competition on the merits as equivalent to the triumph of the firm with the greater productive merits, regardless of whether those merits will be passed on to consumers.

What are the differences at a theoretical level between these two definitions of monopolization? Observe that, if a firm promised to sell forever at a price below its average avoidable cost and maintained its monopoly in this way, it would violate the equally efficient competitor standard as more efficient competitors are likely to be excluded. The same firm would not, however, violate the consumer-betterment standard, because no better offers are likely to be excluded. As the firm's offer is a boon to consumers, in this case, the consumer betterment standard furthers antitrust's dominant welfare goal. However, we should not make much of this advantage because this scenario is implausible. Perhaps the equally efficient competitor standard is justified because the only entrants who will plausibly increase consumer welfare by entry are those with lower costs and the only (or main?) threat to consumer well-being is a monopoly's exclusion of such more efficient rivals? Not so, I argue.

Inefficient rivals often provide important competition, or at least could provide important competition if competition law limited their exclusion, as emphasized by Edlin [2002] and Baker [2010].[64] To understand the bite of the consumer betterment standard in a plausible scenario, consider an efficient

[64] "Preserving a Political Bargain: The Political Economy of the Non-Interventionist Challenge to Monopolization Enforcement," forthcoming in Antitrust Law Journal, 2010.

incumbent that sells at high prices but forestalls entry (from less efficient firms) because it "advertises" a credible threat (or makes a contractual promise) to cut prices post entry to levels below the average costs of entrants but above its own avoidable costs. If entrants would otherwise provide consumers with better deals, then this incumbent monopolizes according to the consumer betterment standard. The incumbent does not monopolize according to the equally efficient competitor standard because the excluded entrants are inefficient.

Entrants in this example stand willing to provide consumers a better deal than the incumbent actually gives consumers, but entrants don't do so because the efficient incumbent would drive them from the market. Those worried solely about productive efficiency are not concerned about productively inefficient entrants, of course, but why should antitrust focus on the exclusion of productively efficient firms if consumer welfare is its ultimate consequentialist goal?

A refuge for those who favor the equally efficient competitor standard is to say that the forestalled entry problem is theoretically possible but can't be reliably identified. How would you know in the example above that entrants stood ready to provide better offers? No doubt this will often be difficult. Yet, in cases such as *AMR* or *Spirit Airlines*, the problem can be identified, often because an entrant actually does offer a better deal for a time before the incumbent responds. Where proof that a monopoly is excluding those likely to offer better deals is unavailable the defendant should win.

A last important question is whether the consumer betterment standard is the same as an overall consumer welfare standard that approves tactics that improve consumer welfare and condemns those that reduce them. The two are related but distinct. The consumer betterment standard is largely a process-based rule, protecting the competitive process, rather than a standard demanding an ultimate consumer welfare calculus. The distinctions will become clearer with an example.

7. An Application of the Three Standards: American Airlines

A concrete example may help to illustrate the three predatory pricing standards I have discussed and show that defining predation according to consumer betterment might be practical and appealing. Consider the American Airlines case brought by the Department of Justice, a case discussed extensively by Edlin [2002], Edlin and Farrell [2003] and Elhauge [2003].[65] American reacted to entrants who offered low fares by overriding "its own capacity-planning models for each route" and increasing the number of flights on the route despite the fact that American's models suggested such increases would be unprofitable, by matching the entrant's prices, and "making more seats available at the new, lower prices".[66] The court found the pattern well illustrated by the DFW-Wichita route, where average prices

[65] *AMR*, 335 F.3d at1109.
[66] *Id*. at 1113.

were roughly $100 pre-"predation", dropped to $60 during "predation," rose to $95 for the year after "predation, " and over $100 thereafter.[67]

The question in the case was whether the quotation marks around "predation" should be removed. The appeals court wrote that "In each instance, American's response produced the same result: the competing LCC failed to establish a presence, moved its operations or ceased its separate existence entirely. Once the [entrant] ceased or moved its operations, American generally resumed its prior marketing strategy, reducing flights and raising prices to levels roughly comparable to those prior to the period of low-fare competition."[68]

The appeals court opinion seemed ambivalent about whether it was applying the equally efficient competitor standard or the sacrifice standard. At times one has the feeling that the court thought they were the same, while at other times the court made a sharp point to critique profit-maximization requirements.[69] In particular, it quoted *Advo* to the effect that "[a]s long as a firm's prices exceed its marginal cost, each additional sale decreases losses or increases profits"[70] --- an assertion that we have seen is false unless inclusive notions of price or marginal cost are used and the court did not allow the Department of Justice's inclusive notions. That is, if the additional sale lowers

[67] *Id*. at 1112.
[68] *Id*. at 1113.
[69] The Department of Justice tried to distinguish profit sacrifice tests from requiring profit maximization as follows. Under a profit sacrifice test for predatory pricing, it is predatory to make a large output expansion in response to entry when that expansion lowers profits beyond what the entry itself does. However, a failure to maximize profits in general, by for example charging prices that are lower than profit maximizing prior to entry or by charging prices above profit-maximizing levels is not predatory pricing.
[70] *AMR*, 335 F.3d at 1115.

profit margins on earlier sales, then a sale at a price above production cost can easily lower profits.

If the AMR case had been decided squarely using profit sacrifice, the Department of Justice should have won the case or at least gotten to the recoupment stage of proof. After all, the court found that American over-rode its own capacity planning model. In addition, the Department of Justice showed that the addition of extra flights (and the extra sales that were part of this strategy) caused overall profits to fall. The appeals court tried to say that the extra flights were still "profitable," but this was really a statement that the ticket revenues of passengers on these flights exceeded the production cost of those flights, not an inclusive cost measure that included forgone revenues as passengers switched from the existing American flights to the new ones, or that included losses as fares fell on existing flights, or that included the opportunity cost of moving aircraft to the route. The court explicitly jettisoned inclusive cost measures distinguishing "actual costs" from opportunity costs or "forgone or 'sacrificed' profits".[71] In so doing, the *AMR* Court ultimately applies the equally efficient competitor test, despite the confusing justifications of AVC tests as a proxy for MC and the court's erroneous explanation that sales at prices above MC increase profits.

Under the equally efficient competitor test, the *AMR* opinion may be correctly decided. The DOJ was unable to show that a non-inclusive measure of incremental revenues was less than a non-inclusive measure of avoidable incremental cost. Although

[71] In particular, the appellate court complained that "Test One effectively treats forgone or 'sacrificed' profits as costs, and condemns activity that may have been profitable as predatory." *AMR*, 335 F.3d at 1119. The appellate court further wrote, quoting the district court, that "It is clear, therefore, that, in proffering Test One, the government has not 'attempted to identify the actual costs associated with the capacity additions.' *AMR Corp.*., 140 F. Supp.2d at 1202."

low-cost carriers (LCC's) have lower costs of operating flights, American has the advantage of operating a hub and spoke system so that it can fill much of its plane with through-passengers which can justify the flight with very low prices for the direct-customers with whom it competes with LCC entrants.

How then might AMR be analyzed under the consumer betterment standard? The key question is whether American's behavior is likely to exclude entrants who would otherwise provide consumers substantially better deals than American offers. We must therefore decide the relevant benchmark by which to measure the "deals that American offers. Is it the $100 pre-predation price, the $60 predatory price, or the final $110 post-predation price? And what exclusion concerns us?

There are three exclusions of potential concern in considering the Dallas-Wichita route. The first is the actual exclusion of Vanguard, the airline that entered, charged low prices and ended up exiting. The second is the probabalistic exclusion of all the potential rivals in the future who may not enter after observing American's behavior. Obviously the second presents evidentiary challenges. Finally, one might well be concerned about exclusion of likely competitors on all of American's other routes.

Suppose the facts had been different. Assume that American had excluded Vanguard with the $60 price but then kept its price at $60 forever. We may surmise that Vanguard was unwilling to offer consumers better deals than the $60 price that American did and was excluded for that reason. That observation suggests that American has not violated the consumer betterment standard in this hypothetical because it did not exclude a rival who would have offered better than American did ($60).

Under the actual facts, however, American raised its price after Vanguard exited. American's typical price was therefore $100. Let's assume that American's average price over a 5-year period was roughly $100 or more except for the short period when Vanguard entered and charged $60. I would argue then that the relevant benchmark comparison is $100, American's price before and after the predatory period. Then the consumer betterment test asks whether American's behavior is likely to exclude rivals who would willingly offer better deals, better than American's usual price of $100. The answer here is yes. In fact, just such a rival was excluded.

Perhaps the evidence presented in *AMR* doesn't conclusively clinch the case (perhaps that particular rival exited for some reason other than American's actions). Then, the case might hinge upon the likelihood of the exclusion of future would-be entrants. Suppose that in addition, the DOJ proved that there were five entrants who would definitely enter the market and charge prices of $75 or below on the Dallas-Wichita route but these firms are unwilling to do so because they witnessed American's prior response and expect a similar response. In that case, the DOJ would have proved its case under a consumer betterment standard.

Defining predation according to consumer betterment has two advantages. The most straightforward is that it allows consumers to enjoy the fruits of more entry holding constant pre-entry pricing, and to enjoy those fruits for longer. The subtler effect is that defining predation according to consumer betterment provides monopolies like American the incentive to price low in the first instance to make their deal better and thereby make entry and predation cases harder. American might likewise price lower post-predation to make predation cases harder to bring because it will be harder to find plausible would-be

entrants. For these reasons, a consumer betterment standard for adjudicating predatory pricing has the prospect of making consumers better off when facing a monopoly.

Consumer betterment focuses on the competitive process and the exclusion of competitors who would offer a better deal. Although it is inspired by consumer welfare it is not the same as a consumer welfare standard, which condemns behavior that ultimately hurts competitors and allows behavior that ultimately benefits consumers.[72] Under consumer betterment, I have argued that American Airlines could escape liability by leaving its price low. Potentially consumers are worse off under such a rule than an Edlin [2002] price freeze rule that didn't allow American to lower its price at all in reaction to entry; potentially, an Edlin [2002] rule would induce American to price lower in the first place or induce more entry than consumer betterment. Likewise, it is conceivable that consumer betterment would invite entrants who will innovate less and ultimately lead to lower consumer welfare in the long run than existing predatory pricing law. I don't see any reason to believe that, but the point is that consumer betterment does not, however, demand a final consumer welfare analysis; it asks instead an immediate question about whether rivals who would offer better deals now are excluded.

[72] See Salop, Steven C., "Question: What is the Real and Proper Antitrust Welfare Standard? Answer: The *True* Consumer Welfare Standard," *Loyola Consumer Law Review* (2010). Or Exclusionary Conduct, Effect on Consumers and the Flawed Profit-Sacrifice Standard, 73 Antitrust L.J. 312, at 314.

8. The Relationship of the consumer betterment standard to Baumol and Edlin's price freezes

The preceding discussion of American Airlines and the application of the consumer betterment standard to that case may remind some readers of the price freeze proposals made by Edlin [2002] and Baumol [1979] (a very different Baumol than the Baumol [1996] who proposed the equally efficient competitor standard). After all, the Baumol and Edlin price freezes and consumer betterment are all geared to maximize the value that consumers derive from entry. Additionally, all three proposals assert that firms can predate without pricing below cost, a controversial idea. It is therefore worth considering at a finer level of detail, what they have in common and how they differ.

In the simplest case, where all competition is price competition, Edlin [2002] proposes that if an entrant substantially undercuts a monopoly (perhaps by 20% or more), then the monopoly cannot respond for a sufficient period to encourage such entry (perhaps 18-24 months). More generally, Edlin [2002] proposes protecting entrants who offer substantial consumer value vis-a-vis the incumbent offer. The idea is to encourage monopolies to price low or otherwise offer value in the first place (pre-entry) as they would in a contestable market, and if they don't do so to encourage entry by those willing to offer better value.

Baumol [1979] proposes that if the monopoly chooses to cut its price after entry, the monopoly cannot raise its price after the entrant exits or is chastened. Liability in Baumol attaches on the price rise, whereas in Edlin on the price cut.

Like the consumer betterment standard, the price freezes of Edlin and Buamol are each geared to increase the value that consumers get from entry. The Edlin rule focuses more on lowering pre-entry pricing and on increasing the chance of entry. The Baumol rule focuses more on getting the most from entry that occurs so that if the monopoly cuts its price those benefits can be enjoyed forever (or at least for a long time).[73]

How do the Edlin [2002] and Baumol [1979] rules relate to the consumer betterment standard in the American Airlines application? In the American Airlines application, the Edlin [2002] rule would have found American guilty of monopolization even if it had left price at $60, because American's reactive price cut triggers liablity. But in such a case, could we fairly say that a competitor has been excluded who would provide consumers a better deal than they get from the monopoly? Probably not. The monopoly ended up offering consumers fares of $60 and Vanguard was not providing better value than that. Only a very aggressive interpretation of the consumer betterment standard would go so far as to condemn such a monopoly.

[73] The Edlin proposal does have one policy lever geared to increasing the value derived from entry given entry, which is the threshold of increased value that the entrant must bring to consumers to earn protection. As that threshold increases (to a point) consumers will get more value from a given entrant.

The Baumol rule would have found American liable when it raised its price after Vanguard exited (but not before). Hence, if American had left its price at $60 after Vanguard exited, then it could not be found to have monopolized. That result is broadly consistent with what the consumer betterment standard suggests, so in this case Baumol [1979] and consumer betterment converge, and are each less aggressive rules than Edlin's price freeze.

The consumer betterment standard is not always identical to a Baumol price freeze, however. Consumer betterment is a general interpretation of competition on the merits and a general standard for monopolization cases, not just predatory pricing cases. If pervasive long-term exclusive dealing contracts prevented a better product from getting to market, for example, they might run afoul of consumer betterment. A Baumol price freeze is inapplicable to exclusive dealing arrangements, so the generality of consumer betterment distinguishes it from the Baumol price freeze.

Even within the predatory pricing context, a Baumol price freeze is not the same as a consumer betterment standard. Consider, for example, the case of the preemptive threat discussed earlier. A monopoly charges a high price, and potential competitors would willingly offer lower prices, but don't enter because the monopoly credibly threatens in a press conference that it will crush any low-priced entrants. Under the consumer betterment standard, if an entrant proves that it would otherwise have entered and offered consumers a better deal, but was excluded by the credible threat, the entrant has a case. Under the Edlin [2002] rule,

the entrant must actually enter and offer a very low price; monopolization only occurs when the monopoly comes through on its threat and matches or beats the entrant's price. Under Baumol [1979], liability does not attach unless the monopoly subsequently raises price (after the entrant exits or is disciplined.)

Is a consumer betterment standard too aggressive in finding liability for a preemptive threat? I don't think so. The preemptive threat provides no social benefit and comes at what is a substantial consumer welfare cost if it is actually shown that the threat prevented entry. Another angle is this. By condemning preemptive threats, the consumer betterment standard also promotes competition, if competition is understood as the process by which firms offer better and better deals to buyers. Both competition and consumer welfare are goals of antitrust, and consumer betterment can serve each master.

8.1. Elhauge and above-cost predation.

One potential objection to the consumer betterment standard is that it can condemn pricing patterns that never dip below cost. Professor Elhauge has recently argued that no predatory pricing rule should condemn above-cost pricing.[74] His main arguments, though, seem to apply more to Edlin's price freeze than to Baumol's price freeze or to consumer betterment.

Elhauge's main objection to Edlin's price freeze was that it could protect high-cost entrants and Elhauge believes that such entrants have very little to offer in

[74] Elhauge, "Why Above-Cost Price Cuts To Drive Out Entrants are Not Predatory---and the Implications for Defining Costs and Market Power." Yale Law Journal, Volume 112, No. 4, January 2003, pages 681-827.

the end to consumers.[75] Elhauge's idea is that even if such entrants offer consumers substantial short-run surplus, if one adopts a rule an incumbent cannot (for a time) match or beat the price of an entrant who does so, little is gained in the long run because once the bar on incumbent price reductions is lifted, the incumbent can drive the entrant from the market. Even if Elhauge is correct about the effects of Edlin's price freeze, the same cannot be said of Baumol's or of consumer betterment.[76] Under either Baumol or consumer betterment, consumers will derive lasting benefits from competition because if they do not, then the monopoly's low pricing will be viewed as predatory rather than competitive.

Elhauge's second objection also seems to apply more to Edlin's price freeze than to Baumol's or to consumer betterment. He worries that limiting aggressive incumbent responses to entry could hurt consumers post-entry because it limits post-entry competition in cases where entry would occur regardless of antitrust protections.[77] (i.e., in cases where the Edlin competition problem doesn't exist). This response applies more to the Edlin price freeze than to Baumol or consumer betterment, because both Baumol and consumer betterment allow post-entry competition. Baumol and consumer betterment simply insist that if the monopoly decides to compete against a low-priced entrant by improving its offer, that

[75] See p. 687.

[76] As an aside, there are two main counterarguments to Elhauge. The first is that much of the gain sought by Edlin's price freeze is to get a monopolist to price low in the first place in an effort to forestall entry. A second is to observe that the inefficiency or efficiency of a firm is not invariant. The disadvantages of an entrant may disappear with time, enabling it to provide long-term competition. Especially in situations with increasing returns, learning by doing, or switching costs, entrants offered protection may survive and promote long-run competition.

[77] Elhauge, p. 687.

consumers get lasting benefits from the improved offer and that it not be too ephemeral and transitory.

In the end then, whatever the force of Elgauge's criticisms of Edlin's price freeze, the criticisms do not seem to apply to consumer betterment or to the Baumol price freeze.[78]

9. Oligopoly vs. Monopoly Predation

Most of our discussion has concerned cases of monopoly predation. Of course, plaintiffs will sometimes complain of predatory pricing in oligopoly industries. The economics in such industries are of course quite different. In fact, the skepticism of the Supreme Court in *Brooke Group* and *Matsushita* seems in many ways more warranted in light of the fact that both cases involved oligopolies.[79]

A canonical story of predatory pricing in an oligopoly is that a maverick firm (Liggett in the case of Brooke Group) decides to increase its market share by undercutting the oligopoly pricing equilibrium.[80] Either all firms together or a few alone respond by engaging in a price war until this firm relents and raises its price.

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[78] Elhauge's other objection is that it is difficult to identify the moment of entry. (see, p. 688). This critique is also specific to Edlin's price freeze. I have ignored here Elhauge's fourth argument about price discrimination (e.g., p. 686-7) because it is far afield from the current discussion.

[79] *See Brooke Group*, 509 U.S. at 212; *Matsushita*, 475 U.S. at 589.

[80] This description is contested, as Elzinga and Wells view Liggett as the incumbent in the discount segment it pioneered and Brown and Williamson (the larger firm in the main market) as the entrant to the discount segment.

In oligopoly industries, raising prices after the predatory episode does not just require discouraging entry, but also requires discouraging competition from many competitors. In principle that is possible, but of course it may require a degree of coordination that is impossible without explicit agreements.

Is an oligopoly price war following a maverick's price cut predatory? Does that depend upon whether its motivation is to encourage higher prices? One approach would be to say that this is essentially a cartel problem and the question is whether the firms have a price-fixing agreement, whether tacit or explicit. Under Section 1 of the Sherman Act, when the maverick agrees with its rivals to raise price (if indeed it does agree) and end the predatory episode, they have created an agreement in restraint of trade. The whole endeavor of predation may also be an aspect of an agreement to charge and maintain super competitive prices, and if this can be proven, then one has a price-fixing agreement.

Absent evidence of agreement, many would believe that the story is not a plausible one (rumor has it that the plaintiff in *Brooke Group* did not want to play the cartel card because it itself might wind up in trouble.) Absent evidence of a cartel agreement or some other mechanism to coordinate a price increase, the price rise, like that in *Brooke Group* is more likely explained by an increase in demand or a decrease in market demand elasticity.

In *Brooke Group* the Court argued that Brown and Williamson only had 1/9th of the market and so most of the returns from its predation would

accrue to other firms.[81] This made the plaintiff's whole theory suspect to the Court. This much made sense.[82] On the other hand, this cartel-dependent observation undermines the Court's rationale for the recoupment requirement. The rationale offered in *Brooke Group* was that without recoupment, "predatory pricing produces lower aggregate prices in the market, and consumer welfare is enhanced." Even if that equivalence between recoupment and consumer injury held for a monopoly (and it holds only roughly at best) it is evidently far from holding if only one in nine high-priced purchases accrues to Brown and Williamson but consumers suffer with each one.

Given the economic differences between cartel situations and monopoly ones, it is odd that many courts in monopoly cases of predatory pricing in the U.S. feel bound by rules of predation that were codified in oligopoly cases like *Matsushita* and *Brooke Group*. This observation motivates the arguments of Edlin [2002] and later the court in *Lepage's* that oligopoly precedents should not apply in monopoly cases where anticompetitive pricing

[81] Specifically, the court wrote: "In this case, for example, Brown & Williamson, with its 11-12% share of the cigarette market, would have had to generate around $9 in supracompetitive profits for each $1 invested in predation; the remaining $8 would belong to its competitors who had taken no risk.

[82] It makes sense anyway, if one discounts as the Supreme Court did Brown and Williamson's internal assessments of what was at stake. See Adams, Walter, James Brock and Norman Orbst, "Is Predation Rational? Is it profitable?" Review of Industrial Organization 11: 753-758,1996 (arguing that Brown and Williamson would have profited in expected value even if the predation had been fairly unlikely to succeed and that it in fact did succeed). But see Kenneth Elzinga and David Wells (disagreeing vehemently, and arguing that the documents relied on by Adams, Brock and Orbst were taken out of context and were unreliable). See finally, Adams, Walter, James W. Brock and Norman P. Obst, "Is Predation Rational? Is it profitable?—A Reply" Review of Industrial Organization 11: 767-770,1996.

practices seem much more plausible and problematic.[83] This point is consistent with the emphasis of Joskow and Klevorick on industrial structure as the first step of analysis in predatory pricing cases.[84]

10. Recoupment

Brooke Group makes clear that an essential element of a predation case is proving that losses can be recouped (at the least for oligopoly cases). Left unclear is what this means and why this element is required.

The Court writes that a reasonable jury might have concluded that Brown and Williamson priced below its cost[85] but that it could not reasonably have hoped to recoup the ensuing losses in an oligopoly industry where it sold only 12% of the output.[86]

Kenneth Elzinga and David Mills, who were economic experts in the case and whose academic writings the court cited regarding the importance of recoupment, describe predation as follows: "the predator prices at nonremunerative levels to drive rivals or an entrant from the market, or to coerce rivals to cede price leadership to the predator. In the second stage, the predator flexes its monopolistic

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[83] *See Lepage's*, 324 F.3d at 151 (The *Lepage's* court makes two distinctions. It argues that *Brooke Group* does not apply to monopolies and second that the plaintiff in *Lepage's* did not allege predatory pricing).

[84] Paul L. Joskow & Alvin K. Klevorick, A Framework for Analyzing Predatory Pricing Policy, 89 YALE L.J. 213, 219-20 (1979).

[85] *Brooke Group*, 509 U.S. at 233.

[86] *Id*.

muscles by charging supracompetitive prices and recouping the losses sustained during the initial stage. " It is straightforward to leap from this description to the two-prong test of *Brooke Group*.

But does the leap make sense? Some would argue that firms don't ordinarily price at "nonremunerative" levels absent prospects of recoupment so that recoupment should be presumed. Why should a predator choose to suffer short-term losses if it does not expect to recoup them? Will a court's expectations be more reasonable or accurate than the alleged predator? The *Brooke Group* Court does not address these questions, so one is left to wonder. [87]

Whether we take the sacrifice view or the equally efficient competitor view of predatory pricing, the recoupment element as a distinct element may seem superfluous. On the other hand, if we adopt the consumer betterment standard for predation, then it is more straightforward that something close to recoupment becomes important. The question under this standard is whether consumers typically pay higher prices than they might absent the predatory behavior. If the predator never raises prices in a reactive entry situation, then this case will be hard to prove. If the predator quickly raises price after the predatory episode, we have a high-priced benchmark to refer to when asking: "Are rivals who would provide better deals than the incumbent likely to be excluded from the market?" The consumer betterment standard does not beg us to explicitly consider the predator's

[87] The Supreme Court *tries* to address this issue in Brook Group at 226 ("Evidence of below-cost pricing is not alone sufficient to permit an inference of probable recoupment and injury to competition.") but actually explains why consumers will not be hurt if recoupment is impossible rather than explaining why it is unreasonable to infer recoupment.

rationality or the profitability of a predatory strategy, but like in a search for recoupment, high prices post predation will be relevant.

11. Conclusions

What can we conclude? U.S. predatory pricing law is built on two foundations. One is a shaky premise, which is that economic reasoning predicts and experience confirms that predatory pricing is rare if existent at all. Neither the theoretical nor empirical literature provides strong support for this premise. The other foundation is a healthy question: the question is what can be done about predatory pricing without overly discouraging desirable price competition. However, that question is often not put in sharp focus. Presumably, it is true, for example, that most price cuts are pro-competitive as Kaplow and Shapiro point out.[88] However, no antitrust proposals attack all price cuts, so that sample is irrelevant. Can we say that drastic price cuts by monopolies (who apparently could have priced much lower in the first place) are mostly pro-competitive, even when these price cuts destroy an entrant who has provided large surplus to consumers? Much less clear.

Here, I introduce a consumer betterment standard to test for monopoly exclusion as an alternative to the equally efficient competitor test. When applied to

[88] Specifically Kaplow and Shapiro write that "beneficial price cuts will vastly outnumber predatory ones, so heavy attention to false positives is nevertheless sensible." Kaplow, Louis and Carl Shapiro, "Antitrust", Handbook of Law and Economics, Volume 2, Edited by A. Mitchell Polinsky and Steven Shavell, (2007).

the American Airlines case, we see, that the result might have been different and more pro-consumer. This test has the benefit (unlike Edlin's [2002] proposal) that it is a standard that can be applied to any type of monopolization case.

If courts continue to apply sacrifice and equally efficient competitor tests, then I urge them to sharply distinguish the two, and if sacrifice is to be identified, that courts should use inclusive notions of cost or revenue as I have described.