PREDATORY PRICING:

STRATEGIC THEORY AND LEGAL POLICY

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We have received valuable comments from legal workshop participants at Boston University Law School, Harvard Law School, Yale Law School; and from economic workshop participants at the Antitrust Division, U.S. Dept. of Justice, European Centre for Advanced Research in Economics (ECARE), European Summer Symposium in Economic Theory at Gerzensee, N.Y.U. School of Management, New Zealand Institute for Antitrust Law and Economics, Princeton University, and Tilburg University Centre for Economic Research. We have also received insightful comments from many individuals, including Lucien Bebchuk,, Mathias Dewatripont, Einer Elhauge, Vic Khanna, Louis Kaplow, Alvin Klevorick, Barry Nalebuff, Jim Meeks, Patrick Rey, Alan Schwartz, Marius Schwartz, Dan Vincent, and Bobby Willig. We thank LeeAnne Baker, Jeremy Bartell, Gretchen Elizabeth Joyce and Chad Porter for dedicated and resourceful research assistance.

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INTRODUCTION

Predatory pricing poses a dilemma that has perplexed and intrigued the antitrust community for many years. On the one hand, history and economic theory teach that predatory pricing can be an instrument of abuse, but on the other side, price reductions are the hallmark of competition, and the tangible benefit that consumers perhaps most desire from the economic system.

The dilemma is intensified by recent legal and economic developments. Judicial enforcement is at a low level, following the Supreme Court's recent *Brooke* decision, the first major predatory pricing decision in modern times.[1] Indeed, since *Brooke* was decided in 1993, no predatory pricing plaintiff has prevailed on the merits in the federal courts. At the same time modern economic analysis has developed coherent theories of predation, contravening earlier economic writing claiming that predatory pricing conduct is irrational. More than that, it is now the consensus view in modern economics that predatory pricing can be a successful and fully rational business strategy; and we know of no major economic article in the last 30 years that has claimed otherwise. In addition, several sophisticated empirical case studies have confirmed the use of predatory pricing strategies. But the courts have failed to incorporate the modern writing into judicial decisions, relying instead on earlier theory no longer generally accepted.

Growing market concentration, fueled by the current merger wave, has further increased the tension between judicial policy and modern economic theory. Notwithstanding the low level of judicial

[1] Brooke Group v. Brown & Williamson Tobacco, 509 U.S. 209 (1993) [hereafter *Brooke*].

support—or perhaps because of the legal vacuum this has created—government enforcement concern with predatory pricing is at the highest level in many years. The Department of Transportation has recently issued proposed predatory pricing guidelines, antitrust enforcement agencies have ongoing investigations, and private antitrust actions have not slackened despite their apparently dim prospects. Moreover, the growing importance of intellectual property, challenges predatory pricing rules designed for tangible goods markets, as illustrated by the Microsoft case where the alleged predatory pricing involves intellectual property. It is the thesis of this paper that the dilemma and tensions confronting predatory pricing enforcement can be resolved and a coherent approach developed by basing legal policy, at least in part, on modern strategic theory.

We begin in Part I by describing the uncertain foundations of present policy based on the judicial belief that predatory pricing is extremely rare or even economically irrational conduct and the tension this creates with modern economic analysis. Part II discusses current enforcement policy, its evolution and culmination in the Supreme Court's *Brooke* decision and, most recently, in proposed government Guidelines for airline predation. Part III outlines our proposed strategic approach, setting forth elements to guide analysis in predatory pricing cases, including rules for prima facie liability and an expanded efficiencies defense. Parts IV through VI develop criteria for identifying predatory strategies, which we then apply to financial market predation in Part IV, to reputation effect predation in Part V, and to cost and demand signaling in Part VI. In Part VII we evaluate possible objections and counterstrategies.

I. THE TENSION BETWEEN CURRENT LEGAL VIEWS AND MODERN ECONOMIC

THEORY

A powerful tension has arisen between the foundations of current legal policy and modern economic theory. The courts adhere to a static, non-strategic view of predatory pricing, believing it to be an economic consensus. But this is a consensus most economists no longer accept. The tension is reflected, however, not so much in the legal rule, which at least in theory would allow arguments based on modern strategic analysis. Rather the tension appears in an extreme judicial skepticism against predatory pricing cases that has led to the dismissal of almost all cases since the *Brooke* decision by summary motion. In order to understand this judicial skepticism and the tension it creates with modern economics, we must examine its source, evaluate its merit and appreciate the challenge posed by modern analysis.[2] This requires that we first state what we mean by predatory pricing.

In most general terms predatory pricing is defined in economic terms as a price reduction that is profitable only because of the added market power the predator gains from eliminating, disciplining or otherwise inhibiting the competitive conduct of a rival or potential rival. Stated more precisely, a predatory price is a price that is profit maximizing only because of its exclusionary or other anticompetitive effects.[3] The anticompetitive effects of predatory pricing are higher prices and reduced

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[2] One of the first economists to call for judicial evaluation of predatory pricing in light of modern strategic theory was Alvin Klevorick. *See* Alvin K. Klevorick, *The Current State of the Law and Economics of Predatory Pricing*, 83 AM ECON. REV. 162 (Papers & Proceedings, 1993).

[3] *See William Inglis, Etc v. ITT Continental Baking Co.*, 668 F2d 1014, 1035 (9th Cir. 1981) ("....anticipated benefits depended on....tendency to discipline or eliminate competition and thereby....reap the benefits of monopoly power"). See Luis M.B. Cabral and Michael H. Riordan, *The Learning Curve, Predation, Antitrust and Economic Welfare*, 45 J. INDUS. ECON. 155 (1997); *see also* JEAN TIROLE, THE THEORY OF INDUSTRIAL ORGANIZATION (1988); Garth Saloner, *Predation, Mergers and Incomplete Information*, 18 RAND J. ECON. 165,166 & n.5; ROBERT H. BORK, THE ANTITRUST PARADOX 144 (1978) Proposal - Unfair Exclusionary Conduct in Airline Transportation Industry Policy, Trade Reg. Rep. ¶50,163 (May 13,1998) [hereinafter *DOT Proposal*]; *cf.* Janusz A. Ordover & Robert D. Willig, *An Economic Definition of Predation: Pricing and Product Innovation*, 91 YALE L.J. 8 (1981) (contestable market approach).

output (including reduced innovation), achieved through the exclusion of a rival or potential rival. But such a definition does not state an operational legal rule.[4] It is therefore necessary to base the legal rule on tractable measures such as cost, market structure, and recoupment.

A key premise in developing an enforcement policy for predatory pricing is the expected frequency and severity of its occurrence. That determination necessarily rests on the twin guides of empirical evidence and economic theory. In *Matsushita* and *Brooke* the Supreme Court found that predatory pricing was speculative and "inherently uncertain,"[5] and noted its "general implausibility."[6] Moreover, in *Matsushita* the Court embraced the view that a "consensus" of commentators finds that predatory pricing is "rarely tried, and even more rarely successful,"[7] and other courts have embraced this view,[8] including a later Supreme Court in the *Brooke* decision.[9] The consensus to which the Court referred rested essentially on empirical studies by John McGee and Roland Koller, published in 1958 and 1969;[10] and the Court cited each work explicitly. [11]

In his 1958 article McGee analysed the trial record of the 1911 *Standard Oil* decision,[12] a case long held up as the classic example of predation. The Rockefeller-dominated Standard Oil Company was thought to have cut prices below cost to drive out its smaller rivals intending later to

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[4] Janusz A. Ordover & Robert D. Willig, *supra* note _ , at 8, 52.

[5] *See* Matsushita Elec. Ind. Co. v. Zenith Radio, 475 U.S. 574, 588-89 (1986).

[6] *Brooke*, 509 U.S. at 226.

[7] *See Matsushita*, 475 U.S. at 590.

[8] *See e.g.*, Bathke v. Casey's General Stores, Inc., 64 F.3d 340, 343 (8th Cir. 1995) (quoting *Matsushita*); Vollrath Company v. Sammi Corp., 9 F.3d 1455, 1460 (9th Cir. 1993) (also quoting *Matsushita*).

[9] *See Brooke*, 509 U.S. at 226.

[10] *See* John McGee, *Predatory Price Cutting: The Standard Oil Case*, 1 J. L. & ECON. 137 (1958); Roland Koller II, *The Myth of Predatory Pricing: An Empirical Study*, 4 ANTITRUST L. & ECON. REV. 105 (1971).

[11] *See Matsushita*, 475 U.S., at 574.

[12] Standard Oil Co. v. U.S., 221 U.S. 1 (1913).

raise prices and exploit consumers. McGee found little indication in the trial record that this had occurred. More than that, McGee found that a predatory strategy by a large firm such as Standard Oil against a much smaller rival would have been economically irrational in view of the much larger market share over which the predator must cut price. Recognizing that the predator cannot sustain such losses indefinitely, the prey will not be induced to leave the market. Nor will lack of funds exclude even the smallest prey since capital markets will step in to supply funds to an efficient producer. But even if the predator could drive the prey from the market, the predator would gain little because when it later attempted to raise price, either the prey or a subsequent purchaser could reopen the failed plant.

For a long time McGee's analysis provided the only coherent economic theory of predatory pricing. While some resisted McGee's conclusion that predatory pricing was irrational,[13] no rival theory emerged. However, examples of actual predation clearly existed. Among the most notable was the use of "fighting ships" to exclude shipping rivals, as for example in the famous *Mogul Steamship Co.* case, as described by B.S. Yamey [14] and more recently by Fiona Scott Morton.[15] To drive out an intruding rival from the China trade the defendant shipping conference quoted rates, which according to Lord Esher in the *Mogul* case were "so low that if continued...they themselves could not carry on the trade."[16] Conference ships were even sent empty to Hankow in order to underbid the upstart shipping line.

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[13] *See* RICHARD A. POSNER, ANTITRUST LAW: AN ECONOMIC PERSPECTIVE, 184-86 (1976); James Miller III, *Comments on Baumol and Ordover*, 28 J. L. & ECON. 267 (1985)(predation occurs).

[14] B.S. Yamey, *Predatory Price Cutting: Notes and Comments*, 15 J. LAW & ECON. 129, 140 (1972).

[15] *See* Fiona Scott Morton, *Entry and Predation: British Shipping Cartels 1879-1929*, 6 J. ECON. & MGMT. 679 (1997).

[16] B.S. Yamey, *supra* note __.

Other striking instances of predation included the use of fighting brands in the match industry in both Canada and the United Kingdom whereby the monopolist would introduce a special brand, locally marketed, to foil new entry, confining sales of the brand to the entrant's local territory and withdrawing the brand as soon as the entrant left the market or sold out to the monopolist;[17] the use of "punitive base points" in the U.S. cement industry, where the industry punished a "recalcitrant" firm that failed to follow the industry's cartel pricing system by making its production centre an involuntary base point with a drastically reduced base price, adhered to by other sellers;[18] the setting up of bogus independents, secretly controlled by the American Tobacco Company to sell at low prices in the prey's territory to force rivals to sell out at depressed prices and thereby maintain monopoly;[19] sustained below cost pricing by Southern Bell Telephone in the early 1900's when entry was threatened by independent telephone companies and further price reduction when entry occurred, combined with other predatory strategies, preceded Bell's growth to market dominance;[20] below cost pricing by the Sugar Trust between 1887 and 1914 to drive out recent entrants,[21] locational predation by a leading Canadian supermarket chain which built new stores close to entrant's plant, with the apparent single purpose of forcing losses on entrant as well as its own plant, sustaining the reputation effect hypothesis;[22] and an experimental study showing the incentive in markets with incomplete information to engage in predation

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[17] B.S. Yamey, *supra* note __, at 136-37.

[18] *Id.* at 137; *see also* FTC v. Cement Institute, 333 U.S. 683 (1948).

[19] Malcolm R. Burns, *Predatory Pricing and the Acquisition Cost of Competitors*, 94 J. POL. ECON. 266 (1986).

[20] David F. Weiman & Richard C. Levin, *Preying for Monopoly? The Case of Southern Bell Telephone*, 102 J. POL. ECON. 103, 105, 113 (1994).

[21] David Genesove & Wallace P. Mullin, Predation and Its Rate of Return: The Sugar Industry, 1887-1914 (May, 1997) (NBER Working Paper 6032).

[22] Balder Von Hohenbalken & Douglas S. West, *Empirical Tests for Predatory Reputation*, 19 CAN. J. ECON. 160 (1986).

to deter entry.[23] Finally, a recent reexamination of the *Standard Oil* case—the case on which McGee had primarily relied in rejecting the logic of predation—found that Standard had in fact used predatory tactics, although not necessarily predatory pricing, against its rivals, but in a far more subtle way than McGee had imagined[24].

Nevertheless, the force of these examples had to confront the absence of supporting economic theory. In addition, Roland Koller's 1969 Ph.D. dissertation, which he boldly titled, "The Myth of Predatory Pricing,"[25] and which has been relied on by the Supreme Court and leading commentators such as Areeda & Turner and Robert Bork,[26] also seemed to provide convincing countervailing evidence.

However, the mythology claim is overdrawn. Koller found that out of 23 cases where he judged the legal record to be sufficiently informative, actual predation was attempted in seven cases (30 percent) and succeeded in only four (17 percent).[27] But a more recent study by Zerbe and Cooper

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[23] Yim Joo Jung et al., *On the Existence of Predatory Pricing: An Experimental Study of Reputation and Entry Deterrence in the Chain Store Game*, 25 RAND J. ECON. 72 (1994); *see generally*, LOUIS PHLIPS, COMPETITION POLICY: A GAME-THEORETIC PERSPECTIVE 206-215 (reviewing experimental evidence).

[24] Standard engaged in predation against its rivals by becoming what Steve Salop has colorfully termed "a cartel ringmaster." United served as the enforcer and beneficiary of a cartel among the railroads upon whose services the oil industry vitally depended. Standard thereby obtained large advantages over its refinery rivals, who paid cartel-enhanced prices, while Standard maintained the cartel by agreeing to the high cartel price, compensated by rebates. In effect, Standard and the railroads divided the cartel profit, obtained at the expense of Standard's rivals, who frequently sold out to Standard at distressed prices. *See* Elizabeth Granitz & Benjamin Klein, *Monopolization by Raising Rivals' Costs: The Standard Oil Case*, 39 J. L. & ECON. 1 (1996).

[25] Roland H. Koller II, *The Myth of Predatory Pricing: An Empirical Study*, 4 ANTITRUST L. & ECON. REV. 105 (1971) (drawn from PhD dissertation, *Predatory Pricing in a Market Economy* (University of Wisconsin, 1969)).

[26] *See Matsushita*, 475 U.S. at 589- 590; Bork, *supra* note _, at 155; 3 PHILIP AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶723b (1996); Philip Areeda & Donald F. Turner, *Predatory Pricing and Related Practices Under Section 2 of the Sherman Act*, 88 HARV. L. REV. 697, 699.

[27] Koller II, *supra* note _ , at 112. The 23 cases were selected out of a total of 95 federal cases in which the defendant was legally adjudged to have engaged in predation. The 95 cases were themselves taken from a total of 123 cases, the author having eliminated without investigation the 28 cases of acquittal. *Id.* At 110.

examining the same cases beginning in 1940 and updated to 1982 concluded that predatory pricing was present in 27 out of 40 litigated cases.[28] Moreover, both studies were likely to have under-reported predatory pricing, as they limited their investigation to litigated cases with revealing trial records. The studies therefore excluded: (1) settlements (including consent settlements with the government) which are likely to be a frequent outcome in strong cases,[29] (2) predatory disciplining where no suit is filed because the prey agrees to comply with the predatory demand, (3) forced buy-outs where the prey may typically release antitrust claims, and (4) cases that were not brought because supporting economic theory was as yet undiscovered or unknown. By contrast, recent case studies which have found striking episodes of predatory pricing, such as the Burns study of American Tobacco,[30] have used powerful econometric techniques not employed in earlier, more impressionistic surveys and some have probed deeply into historical archives, such as Fiona Scott Morton and Genesove and Mullin.[31]

Finally, even if the Koller study had correctly concluded that predatory pricing was rare in litigated cases this would scarcely be surprising given the populist legal standard that prevailed in the pre-1969 period he surveyed, following passage of the Robinson-Patman Act in 1936. Strikingly, only

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[28] Richard O. Zerbe, Jr. & Michael T. Mumford, *Does Predatory Pricing Exist? Economic Theory and the Courts After Brooke Group*, 41 ANTITRUST BULL. 949, 958 (1996); Richard O. Zerbe, Jr. & Donald S. Cooper, *The Empirical and Theoretical Comparison of Alternative Predation Rules*, 61 TEXAS L. REV. 655, 699-708 (1982). The empirical study is described in the earlier 1982 article, but the fact that the data contradict the Koller study was not made explicit until the recent 1996 article, and probably for that reason has been neglected in the legal literature. *See also* Edward H. Cooper, *Attempts and Monopolization: A Mildly Expansionary Answer to the Prophylactic Riddle of Section 2*, 72 MICH. L. REV. 375, 436 & n. 232 (1974) (citing nine cases as involving "clear or highly probable" below cost pricing to discipline or eliminate competition).

[29] *See infra* notes ____.

[30] It should be noted that Koller agrees that the American Tobacco case, analyzed in the Burns study, represents an instance of actual predation. Koller II, *supra* note ___ at 115.

[31] While the empirical studies we have cited appear to be striking instances of predatory pricing, one cannot entirely rule out an efficiencies justification for these actions, as John Lott has recently argued. *See* JOHN R. LOTT, JR., ARE PREDATORY COMMITMENTS CREDIBLE? (1999). However, it seems fair to assume that had any evidence in these careful and often exhaustive studies suggested such a defense, the authors would have reported it.

six of the 23 cases in the Koller sample occurred before 1936 and these includes two of the four cases in which Koller identified actual predation.[32] During the era of expansive Robinson-Patman Act enforcement, discriminatory price-cutting by a large interstate firm injuring a small local rival, accompanied by evidence of animus or simply sustained price-cutting, was virtually per se unlawful. Certainly this was what lawyers were advising their clients,[33] and it seems more than likely that such an over inclusive legal rule would have deterred most predatory pricing. That would of course provide no indication that predation would be rare under a less inclusive legal rule.[34]

The older economic analysis is challenged in an even more fundamental way by developments in economic theory over the last 20 years. Stimulated by the growing number of observed instances of predatory pricing and the emergence of modern game theory which provided the tools to analyze complex strategic situations, economists developed new economic theories beginning in the early 1980's. This new body of research challenges the static framework of perfect information on which McGee had relied. The new analysis explains predatory pricing in a dynamic world of imperfect and asymmetric information in which strategic conduct can be profitable. Under this analysis the predator seeks to influence the expectations of an existing rival, a potential rival, or perhaps most striking of all, the prey's creditors, to convince the rival that continued competition or future entry into the market will be unprofitable. As summarized by Paul Milgrom—

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[32] *See* Koller II, *supra* note _, at 114-117.

[33] CARLA ANDERSON HILLS, ANTITRUST ADVISOR, 312-313 (2d ed. 1978) (desk book intended for company counsel).

[34] The same limitation applies to JOHN R. LOTT, *supra* note ___, which is based in part on a data set of reported decisions (including some of those in the Koller study), where in 15 of the 21 cases Lott investigated, the predation began during the pre-1975 populist era. *See id.* at 29-30.

> Thus, for example, a firm in an industry with rapid product change might cut prices sharply in answer to new entry in order to discourage the new entrant from continuing an active product development program. Whether the entrant attributes its lack of profitability to its high costs, to weak market demand, to over-capacity in the industry, or to aggressive behavior by its competitor, it will properly reduce its estimate of its future profits. If its capital has other good uses, this might lead it to withdraw from the industry. If not, it may nevertheless be dissuaded from making new investments in and developing new products for the industry. At the same time, other firms may be deterred from entering the industry. If *any* of these things happen, the predator benefits.[35]

As this passage suggests, predatory pricing may pose a special threat in rapidly growing, high technology industries, which often involve intellectual property and continuing innovation.[36]

Developing the strategic approach to predatory pricing, economists have formulated several coherent theories. In these theories, which include financial market predation and various signaling strategies, predatory pricing is a rational, profit maximizing strategy.[37] While the formal economic proof of the theories is complex, their intuitions can be simply described. The theory of financial market predation challenges McGee's assumption that the prey can readily obtain capital under predatory conditions, observing that the providers of capital use the threat of termination when profits are low as an incentive scheme to induce the firm to repay its debts. If predation causes the prey's profits to fall, the banks observe the decline, but cannot tell whether it is caused by predation or inefficient performance; and even if a bank could identify predation, it would be unable to write an enforceable lending contract contingent on its occurrence. Under these circumstances, lending to the prey becomes

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[35] Paul Milgrom, *Predatory Pricing*, THE NEW PALGRAVE DICTIONARY OF ECONOMICS 937.

[36] *See* Paul Milgrom & John Roberts, *New Theories of Predatory Pricing*, *in* INDUSTRIAL STRUCTURE IN THE NEW INDUSTRIAL ECONOMICS 112, 116-18 (G. Bonnanno & D. Brandolini, eds 1990);

[37] *See generally*, Janusz A. Ordover & Garth Saloner, *Predation, Monopolization, and Antitrust*, *in* HANDBOOK OF INDUSTRIAL ORGANIZATION 537 (Richard Schmalensee & Robert D. Willig, eds. 1989).

more risky, and banks or other investors reduce or withdraw their financial support. [38]

Similarly, in signaling theories of predation a better informed predator sells at low price to mislead its rival into believing that market conditions are unfavorable. Signaling theories include reputation effect, test market and signal jamming and cost signaling. In reputation effect predation a predator reduces price in one market to induce the prey to believe that the predator will cut price in its other markets or in the predatory market itself at a later time. In test market and "signal jamming" the prey is attempting to ascertain consumer response to a new product or to its entry into a new geographic market. The predator frustrates the prey's market probe by either offering secret discounts and thus inducing the entrant to believe that demand for its product is low, or openly cutting price in the test market to keep the prey ignorant about normal market conditions. In cost signaling a predator drastically reduces price to induce the prey to believe that the predator has lower costs, when in fact the predator has no cost advantage.

To summarize, the present judicial skepticism of predatory pricing assumes that predation is extremely rare, but soundly-based empirical and experimental studies and modern economic theory do not justify this assumption. The judicial skepticism, influenced by economic assumptions based on a world of perfect information, has failed to make use of sophisticated modern theories, founded on a more realistic assumption of imperfect and asymmetric information, where much is not known and where one party may have more knowledge than the other. In addition, the present legal rule does not contain a fully specified efficiencies defense that reaches dynamically efficient pricing strategies, so that

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[38] *See infra* Part V.

predatory pricing enforcement may lead to both under- and over deterrence.

While critics of strategic analysis have suggested a variety of counterstrategies that might foil predation, the counter strategies are not considered in an exhaustive (or equilibrium) analysis that works out all possible moves and countermoves of the parties. Moreover, the counter strategies implicitly assume that market participants have full or symmetric information. As we develop in Part VII, the counterstrategies rarely go through in a world of imperfect information. In another recent critique (which does not rest on an assumption of perfect information) John Lott argues that managers lack incentive to engage in predatory pricing because their compensation depends on short run profits, which can only be reduced by predatory pricing.[39] However, this is an incorrect view of current managerial compensation policies and Lott's statistical study provides no basis for a different conclusion, as we also discuss in Part VII.

We propose to remedy these deficiencies by taking an approach explicitly based on modern strategic theory. Modern theory is critically needed because proof of predatory pricing under recent Supreme Court decisions requires a showing that the alleged predation is economically rational, and that is precisely what modern economic theory demonstrates. Thus, our proposal would augment existing approaches by allowing predation to be shown by proof that a predatory strategy exists and that the predator has acted pursuant to that strategy. This would involve identification of a predatory strategy recognized in the economic literature (e.g. financial predation) or in some instances even a new coherent strategy not covered by current economic writing if sufficiently persuasive and factually

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[39] *See* JOHN R. LOTT, JR., *supra* note ____ , Ch 2.

supported. We emphasize that our proposal is not intended to burden plaintiffs with new requirements of proof, but to augment and enlarge enforcement options to reflect the teachings of modern economics. Plaintiffs would remain free to maintain a predatory pricing case without reliance on modern theory.

Consistent with existing law, our proposed rule would require that price be below some measure of cost, which we think is best viewed in terms of incremental cost. We would also allow an efficiencies defense, but would expand the defense to include dynamic and output-enhancing gains that outweigh competitive losses. We believe that our proposed approach is basically consistent with the legal doctrine of *Brooke*, and would enrich and inform its application by a better understanding of both predatory strategies and efficiencies justifications. In briefest compass, one might describe our approach as a structured rule of reason informed by modern economic theory. Before presenting our proposal in more detail, we first describe current legal policy, its evolution and the present diminished level of enforcement.

II. CURRENT LEGAL POLICY

U.S. antitrust law entered a new era in 1993, when the Supreme Court decided the *Brooke* case, the Court's most important predatory pricing decision in modern times. As interpreted by the lower courts, the decision had an effect on enforcement comparable only to the impact of the Areeda-Turner article in 1975, which launched the cost-based approach to predatory pricing.[40] Indeed, in the five years following *Brooke*, plaintiffs have not prevailed to final judgment in a single reported case. To appreciate the significance of *Brooke* we must know something of its historical background, its proper

[40] Phillip Areeda & Donald F. Turner, *Predatory Pricing and Related Practices Under Section 2 of the Sherman Act*, 88 HARV. L. REV. 697 (1975).

interpretation and subsequent lower court applications..

A. *Before* Brooke*: The Areeda-Turner Rule*

Predatory pricing enforcement extends over almost the full history of the Sherman Act. Cases were infrequent until after passage of the Robinson-Patman Act in 1936,[41] and the inauguration of a strong enforcement effort by the FTC beginning in the 1940's.[42] In the early years of the Robinson-Patman Act, enforcement essentially protected small local firms from price cutting by large sellers. Discriminatory price cutting by a large interstate seller which injured a local rival, accompanied by predatory intent was virtually per se unlawful.[43] Largely missing was any consideration of the consumer interest in lower prices and vigorous competition.[44] Plaintiffs won most litigated cases, including cases they probably should have lost.[45] It seems no exaggeration to call this the populist era of predatory pricing enforcement.

Areeda-Turner Rule. The enforcement climate changed radically in 1975 with publication of the Areeda-Turner article.[46] The article proposed a single per se standard based on average variable cost—the average unit costs of producing the product excluding fixed costs — which replaced the vague conjunction of factors previously used. The Areeda-Turner rule made an immediate impact on

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[41] 15 U.S.C.A. §13(a).

[42] *See generally Koller II*, *supra* note _ .

[43] *See* CARLA ANDERSON HILLS, *supra* note _ , at 312-13. *See generally*, CYRUS AUSTIN, PRICE DISCRIMINATION AND RELATED PROBLEMS UNDER THE ROBINSON-PATMAN ACT, 46-47 (1959). Predatory intent was easily established. *See* Utah Pie Co. v. Continental Baking Co., 386 U.S. 685, 697 (1967).

[44] *See Utah Pie Co.*, 386 U.S. at 706 (Stewart, J., Dissenting).

[45] *See Koller II*, *supra* note _ , at 105. Out of a total of 123 federal cases from 1890 to 1971 the prey was legally adjudged to have suffered predatory injury in 95 cases, or 77 percent of the cases brought.

[46] *See generally*, Joseph F. Brodley & George A. Hay, *Predatory Pricing: Competing Economic Theories and the Evolution of Legal Standards*, 66 CORNELL L. REV. 738 (1981) (describing and evaluating Areeda-Turner and alternative rules).

the courts, indeed so much so that plaintiffs' success rate fell drastically in the years immediately following publication of the article.[47]

Economic Critique. However, a sharp economic critique quickly challenged the Areeda-Turner rule, asserting in general terms the need for a strategic approach, although economists had not yet rigorously proved that predatory pricing could be profitable. The critics charged that the short run AVC rule missed the essential nature of predation—strategic behavior over time. Price cuts by dominant firms must be viewed as strategic communication involving threats and sanctions. Effective policy, therefore, required a predatory pricing rule which considered strategic factors and long run welfare effects.[48] Moreover, the critics did not simply fault the Areeda-Turner Rule. They offered a series of alternative rules, which sought to capture the strategic and intertemporal essence of predatory pricing. The proposals were of two types. The first sought to mirror the seeming simplicity of the Areeda-Turner rule by focusing on a single non-cost parameter that would identify predation. The second attempted to assess strategic conduct directly, relying on multiple criteria, including but not limited to cost.

Falling within the first category were the Williamson output increase rule[49] and the Baumol price reversal rule.[50] Williamson would find pricing conduct by a dominant firm predatory when the

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[47] *See* James D. Hurwitz & William E. Kovacic, *Judicial Analysis of Predation: The Emerging Trends*, 35 VAND. L. REV. 63,140,145(1982) (success rate fell to eight percent).

[48] Actually, Areeda and Turner did not disagree in principle, but emphasized that their rule was pragmatic, and they had simply chosen the best rule, given the constraints of the legal process and the "extremely rare" occurrence of predatory pricing (citing the Koller case study of predatory pricing during the populist era). Areeda & Turner, *supra* note _, at 699, 718 & note 7.

[49] *See* Oliver E. Williamson, *Predatory Pricing: A Strategic and Welfare Analysis*, 87 YALE L.J. 384 (1977).

[50] *See* Baumol, *Quasi-Permanence of Price Reductions: A Policy for Prevention of Predatory Pricing*, 89 YALE L.J. 1 (1979). Baumol has recently written a second article on predatory pricing, which is essentially an updating of the Areeda-Turner rule, but which replaces the AVC standard with average avoidable cost. William J. Baumol,

predator significantly increased output within 12 to 18 months following new entry into the market. The Baumol price reversal rule (Baumol I) would deem a price predatory if it forced a rival to leave the market and the predator thereafter reversed the price cut within the next several years. Neither of these rules attempted to identify the firm's predatory strategy, but relied essentially on the designated objective indicator. While the two tests can be helpful in identifying predation,[51] neither is sufficient by itself. Predation is too multifaceted a phenomenon to be identified by any single factor, and the attempt to do so may lead both to errors of over—and under—inclusion.

The second category of post Areeda-Turner proposals attempted to assess strategic conduct directly, combining one or more economic indicators, usually including cost and market structure, often combined with an appraisal of corporate purpose or intent. For example, in the most comprehensive of the proposals, Joskow-Klevorick would identify suspect pricing through evidence of monopolistic market structure, below cost pricing, reversal of the price cut, and documented corporate purpose to increase prices after competition is eliminated.[52] Other leading proposals were offered by Posner, Joskow-Klevorick, Scherer, Baumol (Baumol II), and Ordover-Willig.[53] These rules are closer in

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Predation and the Logic of the Average Variable Cost Test, 39 J. L. & ECON. 49, 58 (1996) [hereinafter *Baumol II*].

[51] Thus, some judges gave evidentiary weight to the reversal of a price cut after the prey has left the market, as suggested by Baumol and Joskow-Klevorick. Most recently the Department of Transportation issued proposed guidelines that used an output-based rule to identify airline predation, as suggested by Williamson.

[52] *See* Paul L. Joskow & Alvin K. Klevorick, *A Framework for Analyzing Predatory Pricing Policy*, 89 YALE L.J. 213 (1979).

[53] Posner would combine an average total cost test and a high market concentration requirement with proof of an intent to exclude rivals. See POSNER, *supra* note _ , at 188-91. Scherer would require a full rule of reason inquiry into all relevant economic factors, but with particular focus on intent and market structure. F.M. Scherer, *Predatory Pricing and the Sherman Act: A Comment*, 89 HARV. L. REV. 869, 873-875 (1976). *Baumol II* in an updating of the Areeda-Turner rule, essentially embraces the rule as a per se test, although he introduces refinements. *Baumol II*, supra note _ . Finally, Ordover-Willig, reaching for a unifying principle, would define a price reduction as predatory if the gain to the predator depends on the added market power the predator receives from the prey's forced exit. Janusz A. Ordover & Robert D. Willig, *An Economic Definition of Predation: Pricing and Product Innovation*, 91 YALE L.J. 8 (1981).

spirit to our approach, but none of them adequately confronts the fact that predation is not a unitary phenomenon, but involves a variety of predatory strategies that require distinct legal approaches. Thus, the critics did not attempt to describe and classify the various predatory strategies and to craft an approach keyed to an identified predatory strategy, as we propose in this article.[54]

Augmented Areeda-Turner Rule. Following the 1975 Areeda-Turner article, the lower courts at first embraced the average variable cost pricing rule in its per se form, but soon retreated after confronting criticism and litigation problems.[55] To begin with, the AVC rule proved difficult to litigate. Cost determination—however cost is defined—is inevitably complicated and uncertain in a courtroom, particularly when made by juries. Second, all of the economic critics rejected a per se short term cost test. Finally, it appeared to many that a per se rule based on average variable costs strongly favored defendants. Indeed, in the five years immediately following the Areeda-Turner article, no predatory pricing plaintiff prevailed, and the rule was aptly called "a defendant's paradise."[56]

In the face of these difficulties most courts declined to adopt a per se rule, and instead augmented the Areeda-Turner formulation with other factors, which included cost-based presumptions, intent and market structure. While there were variations between judicial circuits, most commonly courts held that a price below average variable cost was presumptively unlawful, while a price above

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[54] Foreshadowing our approach, Richard Schmalensee suggested that a strategic approach to predatory pricing required that analysis be focused on the particular model that fits the factual circumstances of the case. *See* Richard Schmalensee, *On the Use of Economic Models in Antitrust Cases: the Realemon Case*, 127 U. PA. L. REV. 994 (1979).

[55] *See* International Air Ind., Inc. v. American Excelsior Co., 517 F2d 714, 723 (5th Cir. 1975) (adopting the Areeda-Turner pricing rule); William Inglis, Etc. v. ITT Continental Baking Co., 668 F2d 1014, 1032 (9th Cir. 1981) (declining to adopt the Areeda-Turner test without qualifications). *See generally*, Brodley & Hay, *supra* note ___; James D. Hurwitz & William E. Kovacic, *Judicial Analysis of Predation: The Emerging Trends*, 35 VAND. L. REV. 63, 97-98 (1982) (collecting cases).

[56] *See* Williamson, *supra* note _ , at 66-67.

average total cost was conclusively lawful. A price falling between these two cost benchmarks was presumptively *lawful*, but the presumption could be rebutted by evidence of intent and market structure.[57] In the absence of a controlling Supreme Court precedent, the lower courts weighed the non-cost factors differently, but courts in most circuits relied on evidence of intent and increasingly market structure.[58] Some courts followed a "sliding scale" approach, requiring more or less proof of predatory intent (and other non-price factors) depending on how far price fell below average total cost.[59] In examining intent, courts began to distinguish between a mere intent to defeat a rival in competition, however vividly expressed, and a plan to eliminate rivals and then raise prices.[60] On the other hand, a few courts found intent unhelpful, and simply inferred the specific intent required by the statute from the relation of price to cost.[61] In all circuits cost determination remained a source of continuing difficulty, however.[62]

Litigation Outcomes. The decisive impact of the Areeda-Turner rule was reflected in litigation outcomes. In the seven years immediately following the article's publication plaintiffs' success rate

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[57] *See* A.B.A., PREDATORY PRICING LAW: A CIRCUIT BY CIRCUIT SURVEY (Barbara O. Bruckman, ed. 1995) [hereinafter CIRCUIT BY CIRCUIT].

[58] Following Supreme Court dictum (Cargill, Inc. v. Monfort of Colorado, Inc., 479 U.S. 104, 119, n.15 (1986)), the lower courts increasingly recognized high concentration and entry barriers as necessary conditions for predation since otherwise the predator would be unable to recoup its predatory investment. *See e.g.*, A.A. Poultry Farms, Inc. v. Rose Acre Farms, Inc., 881 F.2d at 1401 (citing Joskow-Klevorick). Finally, some courts gave particular weight to evidence that the price cut had been reversed following exit of the prey. *See e.g.*, U.S. Phillips Corp. v. Windmere Corp., 861 F2d 695, 703 (Fed. Cir. 1988).

[59] CIRCUIT BY CIRCUIT, *supra* note _, at 66-67.

[60] *See e.g.*, William Inglis & Sons v. Continental Baking, 942 F2d at 1337 (rejecting offered evidence of intent as more consistent with competition than predation).

[61] *See e.g.*, Barry Wright Corp. v. ITT Grinnell Corp., 724 F.2d 227 (1st Cir. 1983).

[62] The cost issue was expensive to litigate, and subject to unavoidable dispute in resolving whether costs were fixed or variable, and in allocating joint and common costs. Compounding the problem, cost determination was usually a jury question. CIRCUIT BY CIRCUIT, *supra* note ____, at 29. By 1995, Professor Areeda, having minimized the cost determination twenty years earlier, now conceded that "the difficulties of measuring cost are notorious." AREEDA & HOVENKAMP, *supra* note ____ at 508 (Supp.1995).

measured by favorable judgments fell to only eight percent of cases reported (as compared with 77 percent in the populist era).[63] However, in the succeeding 10 years up until the *Brooke* decision, which roughly coincided with the augmented AVC rule, plaintiffs' success rate rose to 17 percent.[64] Moreover, there is reason to think that if settlements are taken into account plaintiffs' success rate may have been considerably higher.[65] Interestingly, the number of reported cases declined in the latter period, perhaps indicating greater selectivity by counsel in cases tried.[66]

Indeed, it is possible to believe that predatory pricing enforcement had achieved a more or less satisfactory equilibrium in the years immediately preceding *Brooke*. While a predatory pricing case remained difficult for a plaintiff to win, flagrant predation based on prices below either average variable or even average total cost remained actionable in most jurisdictions. Juries were something of a wild card, occasionally handing down enormous and perhaps excessive verdicts, but courts moderated these tendencies by granting summary judgement or judgement NOV, following jury verdict. Nevertheless, the continued filing of predatory pricing cases, accompanied by large jury awards when plaintiffs did

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[63] A study of reported predatory pricing decisions from 1975, the year of the Areeda-Turner article, until 1982 found that out of 48 decided cases, the plaintiffs prevailed in only four cases or eight percent of the total. Hurwitz & Kovacic, *supra* note __, at 140,145. *See also* Stephen S. Salop & Lawrence J. White, *An Introduction and Framework, in* PRIVATE ANTITRUST LITIGATION: NEW EVIDENCE, NEW LEARNING 42 (Lawrence J. White, ed. 1988) (over roughly comparable period plaintiffs obtained favorable judgments in seven percent of cases filed with predatory pricing claim, as compared with success rate of 11 percent for all antitrust claims).

[64] Westlaw search, July, 1996.

[65] From 1983-1993 plaintiff won only four cases. But in nine additional cases the court denied defendant's motion for summary judgment. None of these cases was subsequently reported, and one may surmise that favorable settlements may have been obtained in some. Defendants would have good reason to settle strong cases, given the expense of trial and the propensity of juries to give large awards. Assuming that half of the cases led to favorable results for plaintiff, the plaintiff's success rate would rise to 37 percent.

[66] Thus, the number of decided cases fell from 48 cases in the earlier period from 1945 to 1952 to 23 cases in the later period under the augmented AVC rule.

succeed, probably worked to maintain a steady deterrent on real predation.[67] This gradually evolved equilibrium is now threatened—not by the *Brooke* decision as we read it—but by its application in the lower courts. B. *The Brooke Decision*

The *Brooke* decision established a new framework for predatory pricing analysis. While elements of the new analysis were anticipated in two earlier Supreme Court decisions,[68] *Brooke* melded them into a more fully articulated judicial policy. First, predatory pricing required proof of below cost pricing, but the Court did not embrace a particular cost test, such as AVC. Clearly, however, a price could not be predatory unless it was below some measure of cost or even "some measure of incremental cost.".[69] Second, and most strikingly, predatory pricing required proof of recoupment—a dangerous probability, or under the Robinson-Patman Act a reasonable prospect, that the predator can later raise price sufficient to recoup its investment in below cost pricing.[70]

Recoupment is the new factor in *Brooke* and the elaboration of its requirements provides the added element of proof that *Brooke* mandates. Proof of recoupment requires not only that the below-

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[67] It is of course possible that the deterrent effect was excessive, inhibiting competitive pricing. But we know of no evidence supporting such a conclusion, and it appears unlikely in view of the odds favoring defendants in litigated cases, the absence of government enforcement and the small number of reported predatory pricing cases.

[68] *See Matsushita*, *supra* note _ at 592 n. 16 (recoupment concept); *Cargill*, *supra* note _ at 119 n. 15(market structure condition). *See also Rose Acre*, *supra* note _ at 1401, discussing these concepts.

[69] *Brooke*, 509 U.S. at 223.

[70] A predatory pricing case may be brought under Section 2 of the Sherman Act (15 U.S.C § 2) or the Robinson-Patman Act (15 U.S.C §13). While the essence of the predatory pricing claim is the same under either statute, the standard of proof differs. *Brooke* was brought under the more expansive Robinson-Patman Act because the Sherman Act requires proof of a "dangerous probability" of monopolization, while the Robinson-Patman Act requires only a "reasonable possibility" of substantial injury to competition. The Sherman Act prohibits predation that creates or maintains single firm monopoly power, while the Robinson-Patman Act also reaches predation that creates or maintains oligopoly conditions enabling tacit collusion. *See Brooke*, *supra* note ___, at 222. The jurisdictional requirements of the Robinson-Patman Act are somewhat more limiting than the Sherman Act in that the predatory sales must involve price discrimination between different buyers or between buyers in different geographical regions, and either the lower or higher cost sale must be in interstate commerce, as distinct from merely affecting such commerce.

cost price exclude or discipline the predatory victim, which was required under previous law, but also proof that the predator will be able to raise price above the competitive level (recoupment capability) sufficient to compensate the predator for its predatory investment (recoupment sufficiency). The recoupment requirement sharply differentiates predatory pricing from other predatory or exclusionary conduct, where the inference of injury to competition is drawn from the exclusionary conduct and market structure.[71] Recoupment requires the added showing that the predatory conduct will be profitable.[72] More specifically, the plaintiff must demonstrate either (1) actual recoupment of its predatory investment through supracompetitive pricing, or (2) that increased pricing power or other economic conditions make recoupment likely. As a necessary precondition, the Court emphasized that the recoupment requirement could be satisfied only if the market structure facilitated predation, which would require proof of market concentration, entry barriers and capacity to absorb the prey's market share. When these threshold conditions are lacking, summary disposition is appropriate.

In *Brooke* the Supreme Court upheld lower court dismissal because plaintiff had failed to show that price could be raised above the competitive level. Thus, the Court never reached the issue of recoupment sufficiency.[73] Nevertheless, the language of *Brooke* directs plaintiff to demonstrate that the likely predatory price increase would be "sufficient to compensate for the amounts expended on the predation, including the time value of the money invested in it."[74] Overly literal interpretation of this

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[71] *See e.g.*, Eastman Kodak Co. v. Image Technical Services, Inc., 504 U.S. 451, 480 (1992); Aspen Skiing Co. v. Aspen Highlands Skiing Corp., 472 U.S. 585, 596 (1985).

[72] *See* 3 AREEDA & HOVENKAMP, *supra* note _ , ¶726a.

[73] *See Brooke*, 509 U.S. at 243.

[74] *Id.* at 226.

language could vastly complicate predatory pricing cases.[75] However, in examining the facts, the Court makes clear that the recoupment element can be satisfied by showing either that the predatory scheme in fact produced sustained supracompetitive prices, *or* that it was likely to have caused that result, even if it did not actually do so. Thus, evidence of increased prices likely to persist (partial recoupment) or simply an intensified anticompetitive market structure or other market conditions (recoupment capability) would suffice.[76] The subsequent lower court decisions appear consistent with this interpretation.

Clearly, however, the Court applied an exacting standard of proof to the specific evidence offered in the case. The facts in *Brooke* were unusual in that the alleged predator was not a single dominant firm, but a relatively small cigarette manufacturer holding only 12 percent of the total market, although the market itself was highly concentrated. Predation could occur only through the joint action of the leading firms engaged in oligopolistic price coordination. As no explicit agreement was alleged, the joint action necessarily rested on tacit coordination—a predatory theory the Court thought highly problematic, especially in the factual context of the case.[77]

The alleged predation occurred in response to the plaintiff's introduction of non branded, low cost cigarettes, which were known as "blacks and whites," to reflect their stark packaging on which was printed only simple black letters describing the cigarette content. In response to this bold initiative, which proved popular with consumers, the defendant Brown & Williamson put out its own similar non

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[75] *See* 3 AREEDA & HOVENKAMP, *supra* note _, ¶726d.4.
[76] *See generally*, 3 AREEDA & HOVENKAMP, *supra* note _, ¶726d.4 (similar reading).
[77] *See Brooke*, 509 U.S. at 228.

branded black and white cigarette. In a series of ever steeper price cuts the defendant undersold its rival, reducing its price below average variable costs. For 18 months Brown & Williamson held prices below AVC, sustaining losses of millions of dollars. At the end of the 18 month period the plaintiff, one of the smallest cigarette manufacturers, capitulated and raised price. The defendant and the other cigarette companies generally followed. The list price of non branded black and whites rose by 71 percent, while the price of branded cigarettes increased by 39 percent.[78]

On these facts the Supreme Court held that no reasonable jury could find that oligopolistic price coordination had produced supracompetitive pricing or that there was even a likelihood that this would occur. The Court noted that supracompetitive pricing through tacit coordination is both improbable in general and particularly unlikely under the facts of the case due to pricing uncertainty caused by multiple product varieties and the practice of giving rebates on list prices, demand uncertainty created by the introduction of unbranded cigarettes, divergent incentives among competing manufacturers, the absence of evidence showing that pricing signals between manufacturers were understood, and the not surprising denial by the plaintiff's officers that they had tacitly colluded with their competitors, either voluntarily or by compulsion.[79]

The Court's exacting requirements of proof appear to be driven partly by the assumption that predatory pricing rarely occurs and partly by its skepticism toward predation by tacit coordination among rival firms. As discussed earlier, the view that predation is rare and implausible conduct is based on outdated economic theory, but in fairness the old theory was the only economic view presented to

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[78] *See Brooke*, 509 U.S. at 249 (dissenting opinion).
[79] *See id.*, 509 U.S. at 237.

the Court. Beyond that, and more immediate to the case, the Court's view of the predatory pricing claim was colored by its doubts that predation by tacit coordination could realistically occur. Indeed, the Court of Appeals held plaintiff's predatory theory to be so weak that it dismissed the case as economically senseless.[80] While not willing to go that far, the Supreme Court itself expressed grave misgivings, emphasizing the difficult coordination problem of maintaining predation by tacit coordination without explicit communication, particularly in view of the defendant's small market share.[81] In cases resting on other, generally accepted predatory theories both the Supreme Court and the lower courts are free to take a less skeptical view of predatory strategies. Thus, *Brooke* does not foreclose reliance on the soundly based predatory theories discussed in this paper.

A strategic view of recoupment would close the gap in predatory pricing enforcement caused by the neglect of modern analysis. In *Brooke* the Court omitted from its analysis any consideration of strategic factors such as possible gains from deterring aggressive pricing in future time periods or in other cigarette markets, for example, branded cigarettes. Nor did the Court consider the counterfactual event of what might have happened in the absence of the price war—the diminished profits the predator would have earned had it *not* forced the prey to stop cutting prices. By contrast under a strategic approach counsel might have attempted to show that a reputation effect or other predatory theory, such as financial market predation, enabled probable recoupment. Whatever might have been the ultimate outcome, that is the issue that should have been submitted to the courts.

C. *Post-Brooke Decisions*

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[80] Liggett Group, Inc. v. Brown & Williamson Tobacco Corp., 964 F.2d 335, 342 (1992).

[81] *See Brooke*, 509 U.S. at 228; *Matsushita*, 475 U.S at 590.

As interpreted by the lower courts, the *Brooke* decision had a powerful effect on case outcomes. In the six years following *Brooke* plaintiffs have not prevailed in a single case. Of 37 reported decisions, defendants have won 34 cases, and the remaining three cases were settled after plaintiffs survived motions for summary judgment or dismissal. Strikingly of the 34 cases won by defendants all but one were decided by summary judgment, judgment N.O.V., or dismissed on the pleadings.[82]

Plaintiffs' dismal success rate since *Brooke* (after eliminating clearly misconceived cases) appears to be caused at least in part by (1) exacting proof and pleading requirements, spurred by the Supreme Court's open invitation to dismiss predatory pricing cases by summary means, (2) skepticism that predation can ever be a plausible business strategy, also influenced by the Supreme Court's opinion, and perhaps not unrelated (3) judicial neglect of modern strategic theories of predatory pricing.

Review of the post-*Brooke* decisions shows that the lower courts clearly took full advantage of the Supreme Court's invitation to dispose of non-meritorious cases by summary means. Indeed, there have been only four reported trials since *Brooke* and in the two cases where plaintiffs initially prevailed, the district courts reversed the jury verdicts by judgment N.O.V. To be sure, many of these cases appear to have been appropriate for summary disposition; for example, in 12 cases the defendant's market share was below 40 percent or other structural factors showed that post-predation market

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[82] Westlaw search, July, 1999; telephone conferences with attorneys verifying settlement on August 7,15,21, 1998. While it is difficult to judge the merits of the universe of legal claims based on success rates at trial, a sharp *change* in trial outcomes may be more informative, following a Supreme Court decision and absence of apparent change in other factors affecting litigation outcomes. (*See* George L Priest & Benjamin Klein, *The Selection of Disputes for Litigation*, 13 J. LEGAL STUD. 1 (1984); Donald Wittman, *Is the Selection of Cases for Trial Biased?*, 14 J. LEGAL STUD. 185 (1985).)

power was lacking.[83] But it is also true that the courts dismissed seven cases on the pleadings, sometimes neglecting the need in antitrust cases to conduct discovery to develop necessary evidence;[84] and in other cases imposed severe requirements of proof at the summary judgment level.[85] Despite the fact that plaintiffs defeated motions for summary disposition in three cases (all of which were then settled)[86], the prospects of a predatory pricing claim in the lower courts remain far from encouraging[87]

However, there appears to be a brightening prospect that the courts will begin to analyze predatory pricing in the light of modern economics. In *Advo, Inc. v. Philadelphia Newspapers, Inc.*[88] the Third Circuit accepted reputation effect as a possible theory of predatory pricing. The court indicated that price cutting by a chain store in selected local markets could be predatory when the price cutter's demonstrated predatory conduct inhibits competition in other markets as well as the predatory market, causing prices to rise. Finding that a reputation effect theory "makes economic sense," the

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[83] *Brooke* held that summary disposition is appropriate where the market structure is unconcentrated, entry barriers are low or the defendant lacks excess capacity. *See* 509 U.S. at 209. To this list some lower courts have added a requirement that rivals should not be able to expand output. *See* Rebel Oil Co., Inc., v. Atlantic Richfield Co., 51 F.3d 1421, 1434 (9th Cir. 1995), *cert denied*, 516 U.S. 987 (1995) (existing rivals lack capacity to increase output in short run). But, as we shall see, strategic factors may prevent smaller rivals from increasing output even when they have excess capacity. *See infra* text accompanying notes ____.

[84] *See* Zeller Corp. v. Federal-Mogul Corp., 1997-1 Trade Cas. (CCH) ¶71, 805 (N.D. Ohio July 25, 1996)(dismissing complaint that alleged only that defendant could recoup predatory losses rather than recoup "more than" its losses); *see also* C.B. Trucking, Inc. v. Waste Management, Inc., 137 F.3d 41 (1st Cir. 1998) (affirming summary judgment for failure to produce evidence of below-cost pricing despite plaintiff's argument that district judge ruled on the motion without permitting discovery).

[85] *See* Scripto-Tokai Corp. v. Gillette Co., 1994-2 Trade Cas. (CCH) ¶70, 821 (C.D. Cal. Sept. 9, 1994) (summary judgment for failure to specify which variable costs uniquely incurred in producing predatory output).

[86] Multistate Legal Studies, Inc. v. Harcourt Brace Jovanovich Legal and Prof'l Publ'g, 63 F.3d 1540 (10th Cir. 1995), *cert. denied*, 116 S.Ct.702 (1996); Adventura Cable Corp. v. Rifkin/Narragansett S.Fla CATV Ltd. Partnership, 941 F. Supp. 1189 (D.D. Fla. 1996); Servicetrends, Inc. v. Siemens Medical Sys., Inc., 870 F. Supp. 1042 (N.D. Ga. 1994).

[87] Certainly, this is how the practicing bar appears to be reading the results. *See* Penelope A. Preovolos, *Predatory Pricing and Unfair Trade Practices*, 37th Annual Advanced Antitrust Seminar (Jan-March 1998) (*Brooke*'s statement that bases for recovery not easy to establish is "masterpiece of understatement")

[88] Advo, Inc., v. Philadelphia Newspapers, Inc., 51 F.3d 1191 (3d Cir. 1995).

court rejected its specific application in the case as factually unsupported.[89] Similarly, in *Traffic Scan Network, Inc. v. Winston*,[90] the district court rejected a reputation effect argument not because it was implausible, but because market conditions would have prevented such an effect. In addition, the Department of Justice has recently filed a civil complaint against American Airlines, based in part on anticompetitive reputation effects from alleged predatory pricing.[91]

Proposed DOT Guidelines. Perhaps the most striking development since the *Brooke* case has been the recently proposed Department of Transportation (DOT) Guidelines, which explicitly recognize predatory pricing as a strategic problem and would allow proof of recoupment based on reputation effects.[92] The Guidelines focus on the ability of a major air carrier dominating a city hub, such as Chicago or Atlanta, to exclude competition and potential competition between the hub and directly connecting non-hub cities.[93] The observed strategic mechanism is a drastic expansion of capacity and lowering of fares by a locally dominant airline in response to new entry of an independent airline. Using the economic definition of predatory pricing, the Guidelines would identify as predatory any response to new entry by a hub-dominant major airline that makes economic sense only because the major airline can exclude the entrant from the market and thereafter charge high fares.

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[89] *Id.* at 1196 n.14 (the defendant competed in only a single market, and no proof was offered that the defendant's parent company—a newspaper chain—was pursuing such a strategy). *See also* Jonathan Baker, *Predatory Pricing After Brooke Group: An Economic Perspective*, 62 ANTITRUST L.J. 585 (1994) (cited by court).

[90] *See* Traffic Scan Network, Inc. v. Winston, 1995 Trade Cas. (CCH) ¶ 71,044 (E.D. La. May 24, 1995).

[91] *See* complaint in United States v. AMR Corp., Civil Action No. 99-1180-JTM (D. Kan. Filed May 13, 1999).

[92] *See* DOT Proposal - Unfair Exclusionary Conduct in Airline Transportation Industry Policy, 7 Trade Reg. Rep. (CCH) ¶ 49,227, 49,228-229. The Department of Justice has also come to view predatory pricing in airline markets in strategic terms. See Roger W. Fones, Predation in the Airline Industry, Speech Before the ABA Forum on Air and Space Law (June 12, 1997).

[93] Statement of Nancy E. McFadden, General Counsel, U.S. Dept. of Transportation before Subcommittee on Aviation, U.S. Senate, April 23, 1998.

From a strategic viewpoint the most notable thing about the new Guidelines is their reliance on reputation effects to prove recoupment—the expected gains to the predator from deterring future entry by other airlines.[94] Thus, if the predator suffers sustained losses in a contested local market such that recoupment in the local market appears doubtful, evidence that the predation deterred future entry into either the local market or the predator's other monopoly markets could presumably establish recoupment.

In contrast to *Brooke* the Guidelines do not require proof of below-cost sales. Instead, the Guidelines rely on a gross revenue measure to identify predation. Thus, a predatory response to new entry is a capacity increase in a local hub market that causes the hub-dominant airline to forgo more revenue than all of the new entrant's capacity could otherwise have diverted from it (or simply yields lower revenue than would a "reasonable alternative strategy" for competing with the entrant).[95] The substitution of a gross revenue or output measure for the traditional cost test may be justified because the special characteristics of airline markets makes output expansion a particularly effective predatory strategy. Airlines are able to discriminate between customers with great precision and can respond swiftly to competitor moves, based on "real time" information about rivals. Mobility of assets, including the ability to lease aircraft, permits rapid expansion of capacity in contested local markets.[96]

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[94] *See* DOT Proposal, *supra* note _ at ¶ 49, 228-29; Roger W. Fones, *supra* note _ .

[95] The Guidelines indicate that a reasonable alternative response to new entry would be to match the entrant's low fares without significantly increasing capacity. Alternatively, the hub-dominant airline might price its flights in the contested market in a manner consistent with its pricing in other markets where it competes on a sustained basis with new entrants.

[96] For these reasons the use of an output test in local airline markets rests on a firmer basis than earlier proposals for identifying predatory pricing based on substantial output expansion in anticipation of entry. *See* Oliver Williamson, *supra* note _____. In a typical industrial setting, substantial output expansion requires constructing a fixed-site plant that serves a national, regional, or other broad industrial market. Under these conditions a strategy of output expansion would be costly since it would require large investment in advance of

The main objection to the use of a non-cost standard to measure predatory pricing is loss of certainty in business planning. Since future demand, particularly in airline markets, may be difficult to predict, under an output rule a major airline may face difficulty in determining whether it can lawfully expand its capacity to serve a local market following new entry.[97] . On the other hand cost determination in airline markets also presents difficulties due to secondary effects in other markets caused by flights on a specific city pair route.[98] Despite the difficulties it poses in airline markets, a cost standard may provide a more secure basis for business planning.[99]

The DOT Guidelines conceive the problem of airline predation in strategic terms. They do not attempt to define predatory pricing under a single legal formulation, but rather identify the particular predatory strategy involved in local airline markets. This approach is consistent with modern economics, and it is the viewpoint taken in this paper. While we would generally adhere to a cost-based approach, relevant costs would include long run incremental costs, as well as short run costs.

III. PROPOSED APPROACH

A strategic approach to predatory pricing would augment existing practice in two critical respects. First, it would explicitly permit proof of predation based on modern economics. Second, it would expand the standard efficiencies and business justification defenses to encompass procompetitive

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entry, involving high opportunity costs. Mobility of airline plant reduces these costs significantly.

[97] Of course dramatic output increases, such as increasing local output ten-fold, offer no planning difficulty.

[98] Robert M. Rowen, *The Dilemma Of Predatory Pricing In The Airline Industry*, 13 WTR AIR & SPACE LAW 1, 13 (1999).

[99] However, assured predictability is perhaps less vital under the cease and desist enforcement available to the DOT, which includes no punitive remedies. On the other hand, under the Sherman Act the risk of criminal and civil penalties and treble damage suits cause greater need for planning certainty, particularly safe harbors. In any event the Justice Department in announcing its similar output-based enforcement policy under the Sherman Act for airline predation, includes a cost standard.

dynamic gains. In addition, we suggest use of short and long run incremental cost rather than average cost in proving below cost pricing, and, further, suggest use of a discriminating burden-of-proof for the different legal elements within our framework. Neither of these latter suggestions is essential to our proposed strategic approach, however.

While the use of modern economics in proving predatory pricing is novel compared to recent practice in most of the lower courts, such an advance is implicit in the recoupment standard adopted by the Supreme Court. The recoupment requirement was designed to screen out cases where predation appeared unprofitable and hence irrational. The Court's skepticism about the rationality of predatory pricing was justified by the now dated economic authorities on which the Court relied.[100] However, modern economics has developed new, more sophisticated theories of how recoupment may be achieved consistent with rational behavior, and thus identifies economic conditions under which a predatory pricing strategy is plausible.

Accordingly, our approach would permit the plaintiff to amplify its proof of predation by showing that under the specific facts of the case, one or more strategic theories are economically plausible and that surrounding economic conditions make recoupment likely in the light of such theory. We emphasize that we are not adding a new element of proof. Proof of predatory pricing under modern theory would augment and complement existing approaches. Plaintiff could still bring a case without advancing modern strategic theory. However, under our proposal a plaintiff could also base proof on well-founded strategic analysis whenever the facts warrant.

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[100] *See supra* text accompanying notes ____.

Our proposed approach is consistent with *Brooke*. That decision permits proof of predatory pricing and recoupment based on a scheme of predation that excludes rivals and enables the predator to recoup predatory losses. Proof of recoupment may be based on an actual price increase in the predatory market, increased concentration and entry barriers in the post-predation market, or on other relevant market conditions, including market structure and conduct, that make recoupment likely in the future.[101] Thus, proof that market conditions make recoupment probable under an identified and recognized strategic theory should satisfy this test. Perhaps because modern strategic theory was not presented to the Supreme Court in *Brooke*, a gap exists in predatory pricing coverage. Interpretation of the recoupment requirement to encompass modern analysis would close that gap.

A strategic analysis also has implications for the efficiencies justification, which would assume a larger role. The justification would encompass not only defensive responses to price cutting by rivals (e.g. meeting competition) or temporary market conditions (e.g. excess inventory), but also market expanding dynamic efficiencies, such as learning-by-doing and network economies. Strikingly, these efficiencies, particularly dynamic efficiencies, also involve recoupment, but in this case the post-predation gain is procompetitive because recoupment comes not from output contracting monopoly pricing, but from output expanding efficiencies.

A. *Legal Elements—Prima Facie Case*

Consistent with existing law, the proposed rule would require proof of the following elements: (1) a facilitating market structure, (2) a scheme of predation and supporting evidence,

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[101] *See Brooke*, 509 U.S. at 226; *see also Multistate Legal Studies Inc.*, 63 F.3d at 1554-56; *Rebel Oil Co. Inc.*, 51 F.3d at 1434 (9th Cir. 1995).

(3) probable recoupment, (4) price below cost, and (5) absence of an efficiencies or business justification defense.[102] We discuss the four elements necessary to make out a prima facie case of predatory pricing in this section, and the efficiencies defense in a separate section. The plaintiff would generally have the burden of proof on the first four elements, while the defendant would have the burden on the last element.

1. *Facilitating Market Structure*

The market structure must make predation a feasible strategy. This requires what Joskow and Klevorick call "short run pricing power"—the ability to raise prices (or otherwise exploit consumers) over some significant but not necessarily unlimited period of time. A predatory market structure exists when a dominant firm or small group of jointly acting firms has high market share, and when there are both entry and reentry barriers.[103] When these conditions exist, predation may injure competition. When they do not, the court should be able to dismiss the case if the structural facts are sufficiently clear. Thus, predatory market structure would operate as a threshold screen, as the Supreme Court held in the *Brooke* case.

Entry barriers exist when a new market entrant faces costs that the incumbent predator need not bear, or no longer faces. The most frequent example is sunk costs—fixed cost investment that cannot be withdrawn from the market except at large sacrifice, such as the trackage of a railroad. While the predator has borne these costs in the past, they are now irretrievable. Thus, if challenged by

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[102] In *Brooke* the Court included scheme of predation, exclusionary capability and recoupment within the single element, recoupment. 509 U.S. at 225. We have separated them into two elements for analytic clarity.

[103] *See generally*, Joskow & Klevorick, *supra* note ____, at 274-79; Janusz A. Ordover & Robert D. Willig, *An Economic Definition of Predation: Pricing and Product Innovation*, 91 YALE L.J. 8, 10-13 (1981).

new entry, the incumbent will rationally disregard such costs in its pricing decisions rather than lose the business. The entrant on the other hand must now incur such costs, and hence faces risk of underpricing by an incumbent with sunk costs. Thus, sunk costs may act as an entry barrier, giving the incumbent power to raise price above the competitive level.

Reentry barriers exist when a firm that has left a market bears significant costs in seeking to reopen its business. As an example, a small airline forced to cease operations in a local market just as it is beginning to establish its brand name, may have damaged its reputation as a reliable alternative to the established carrier. To reenter it will have to slowly rebuild its reputation, and this is costly. Reentry barriers combined with entry barriers give a successful predator the power to raise prices. The Supreme Court has emphasized that proof of predatory pricing requires proof that entry and reentry barriers continue to exist during the recoupment period.[104]

However, the courts have failed to see that successful past predation can itself operate as an entry and reentry barrier particularly where reputation effects are present. In such cases the would-be entrant anticipates that any attempt to enter the market will evoke a predatory response from the incumbent. Anticipating that consequence, the firm declines to enter. That is to say, the incumbent's past reputation as a predator deters future entry or reentry.[105] The problem of proving entry barriers, particularly those based on reputation effect, can be eased by presuming their existence if the incumbent significantly raises price after the prey's exit without inducing new entry or reentry. Such a presumption

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[104] *See* Cargill, Inc. v. Monfort of Colorado, Inc., 479 U.S. 104, 119-121 (1986).

[105] *See infra*, text accompanying notes _ ; See also LOUIS PHLIPS, COMPETITION POLICY: A GAME -THEORETIC PERSPECTIVE 220-21 (discussing Mogul case, *supra* note _ , and accompanying text).

is similar to the inference made under the rule of reason that proof of anticompetitive effects may serve as proof of market power.[106] The presumption is of course rebuttable since other economic factors, such as excess capacity may explain the absence of entry.

2. *Scheme of Predation and Supporting Evidence*

Proof of predatory pricing and recoupment require a showing that predation is plausible ex ante and probable ex post. Ex ante plausibility is shown by proof of a predatory scheme and supporting evidence. Ex post probability is shown by proof of subsequent exclusion of rivals and post-predation market conditions that make future recoupment likely. We discuss the ex ante condition—proof of a predatory scheme and supporting evidence—in this section and the ex post conditions in the following section.

Under *Brooke* and *Matsushita* proof of a predatory scheme, under which the predator can expect to recoup its predatory losses, is an essential element in a predatory pricing case. Moreover, the degree of plausibility of the predatory scheme vitally affects the standard of evidentiary proof for recoupment. If the alleged predatory scheme is only weakly plausible, as the Court found to be the case in *Brooke* and *Matsushita*, more persuasive evidence of recoupment is required.[107] Illuminating the stringency of this requirement, the Court in *Brooke* subjected the evidence to a demanding analysis such as to make it doubtful that any claim of multi-firm predation could have survived the Court's

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[106] *See* FTC v. Indiana Federation of Dentists, 476 U.S. 447, 459 (1986); NCAA v. Board of Regents of Univ. of Okla., 468 U.S. 85, 109, 120 (1984).

[107] *See Matsushita*, 475 U.S. at 587 (more persuasive evidence needed when predatory claim implausible); *Brooke*, 509 U.S. at 226, 228 (exacting scrutiny of recoupment evidence where predatory scheme was " least likely means of recouping predatory losses"). *Cf.* First National Bank of Arizona v. Cities Service Co., 391 U.S. 253, 277-280 (1968).

scrutiny. However, where the predatory theory is less problematic, proof of market conditions enabling probable recoupment, while still required, more readily leads to the conclusion of probable recoupment. In any event, taken together the alleged scheme of predation and post-predation market conditions must add up to a compelling theory of predation.

The Court found the alleged predatory scheme in *Brooke* implausible because the scheme appeared to require sustained tacit coordination between multiple firms without explicit communication or agreement on a predatory strategy and a mechanism for recoupment. In the absence of a focal point for coordinated action, it was unclear how the alleged predators could overcome cheating and free-riding problems in executing a predation and recoupment strategy. The Court also thought the predatory scheme to be implausible in *Matsushita*, even though it involved alleged agreement between the alleged predators, because of the inherent difficulties of orchestrating a coordinated predatory pricing and recoupment strategy among competing firms.[108]

The predation theories we discuss stand on a stronger foundation of economic theory. Rigorous economic analysis, developed over the last 30 years and using the tools of applied game theory, identify the economic conditions under which predatory pricing is rational, profit-seeking conduct by a dominant firm. Expected or anticipated recoupment is intrinsic to these theories, because without such an expectation predatory pricing is not sensible economic behavior. Thus, modern theories when factually supported may sustain the plausibility of a predatory scheme. Finally, when modern theory has been properly briefed to the Supreme Court in other types of antitrust cases and

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[108] *See Matsushita*, 475 U.S. at 590-595.

when the predatory or exclusionary theory is supported by convincing factual evidence, the Court has been willing to follow modern theory.[109]

3. *Probable Recoupment*

Under *Brooke* and *Matsushita* a predatory scheme, however plausible and well supported by ex ante evidence, violates the antitrust laws only if the ex post evidence shows that the alleged predatory pricing (1) excludes or disciplines rivals or potential rivals, and (2) thereby injures competition and consumers by enabling the predator to raise prices or lower quality, or dangerously threatens to do so. The exclusion or disciplining of rivals is the intended instrument of the predatory scheme and the future raising of prices is its anticipated effect. Together they establish that the predatory scheme is not only plausible in itself, but had its planned effect on rivals and injures consumers either now or in the foreseeable future. We discuss the two effects separately for clarity of analysis.

Exclusionary Effect on Rivals. The means by which predatory pricing works its ultimate injury to consumers is through its exclusionary effect on rivals or potential rivals. Exclusionary effects involve either the exclusion of a rival or potential rival from the market, or the disciplining of the rival's competitive conduct. At a minimum this requires proof that the below-cost pricing was capable of achieving its intended exclusionary effect on rivals, as the Supreme Court noted in *Brooke*.[110] While such pricing must have been a substantial factor in producing this result, the defendant's low prices need not have been the exclusive cause of the victim's market exclusion or threatened exclusion; and indeed

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[109] *See Eastman Kodak Co.*, 504 U.S. 451, cited with approval in *Brooke*, 509 U.S. at 229.

[110] *See Brooke*, 509 U.S. at 225.

other factors may have contributed, such as increased raw material costs or reduced demand. It suffices to show that the alleged unlawful conduct was a "material cause," "a substantially contributing factor," or "among the more important causes."[111] On the other hand, predation that was only "a minor contributing factor" to the victim's forced exclusion or threatened exclusion would be insufficient to establish an exclusionary effect.[112]

A second type of exclusionary effect is the disciplining of rivals. In this case the rivals are not excluded from the market, but their competitive conduct is inhibited. While some writers define predatory pricing solely in terms of rival exclusion,[113] disciplining of rivals is a well accepted anticompetitive effect, particularly by legal authorities.[114] In fact, the disciplining of rivals is itself exclusionary since its object is to exclude the growth and expansion of the prey or the prey's entry into new markets. Proof of a disciplining effect requires the plaintiff to show (1) the victim is a rival firm whose competition threatens or potentially threatens the profits of the predator, (2) following the period of below cost pricing the victim raised its prices, became less aggressive or otherwise restrained its competitive conduct, or that the below-cost pricing was capable of producing this result, and (3) the

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[111] 2 PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶ 363a (Rev. Ed. 1995). Some courts have required a showing that the antitrust violation be the "predominant cause," but this view appears excessive and has been criticized. *Id*.

[112] Proof that the predatory price was a substantial factor in causing the victim's injury is the normal requirement in antitrust cases because proof that an act is the sole or predominant cause of the injury might preclude effective enforcement. *See* Zenith Radio v. Hazeltine Research, Inc., 395 U.S. 100 (1969); Irvin Industries, Inc. v. Aerospace Corp., 974 F.2d 241,245 (2nd Cir. 1992); *see generally* 3 AREEDA & HOVENKAMP, *supra* note _ , ¶657.

[113] *See* Brodley & Hay, *Predatory Pricing: Competing Economic Theories and the Evolution of Legal Standards*, 66 CORNELL L. REV. 738, 741(describing "classical view"); Ordover & Willig, *supra* note _ , at 9; JEAN TIROLE, THE THEORY OF INDUSTRIAL ORGANIZATION 373 (1988).

[114] *See Brooke*, 509 U.S. at 223-225, 3 AREEDA & HOVENKAMP, ANTITRUST LAW ¶ 723a; BORK, THE ANTITRUST PARADOX 144, Milgrom & Roberts, *New Theories of Predatory Pricing*, *in* INDUSTRIAL STRUCTURE IN THE NEW INDUSTRIAL ECONOMICS *supra* note _ at 112.

below-cost pricing was a substantial factor in causing these exclusionary effects.[115]

The *Brooke* case provides an illustration of price disciplining (although the plaintiff's case ultimately failed on the issue of recoupment). The victim Liggett had introduced low cost, unbranded cigarettes which threatened the profits of the larger manufacturers including the defendant Brown and Williamson. After 18 months of sustained below cost pricing by defendant, Liggett raised its prices and essentially became a price follower. Below cost pricing clearly appeared to have been a substantial factor in causing Liggett to raise its prices and to become less aggressive since it was only after five successive price cuts by defendant that Liggett ultimately succumbed.

Injury to Competition and Consumers. Under *Brooke* and *Matsushita* proof of an injury to competition, actual or probable, is an essential element of a predatory pricing case. This requires evidence either that (1) the alleged predatory scheme caused prices to rise above the competitive level in the predatory market or in another strategically-linked market in which the predator has market power, or (2) market conditions and the predator's conduct makes future recoupment likely under the alleged scheme. Proof of actual recoupment is not a necessary ingredient of predation since *Brooke* requires only a showing of probable recoupment. Indeed, if actual recoupment were required, a

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[115] While *Brooke* held that disciplining predation can clearly violate the Robinson-Patman Act, some might question whether it also violates Section 2 of the Sherman Act because predation that does not exclude rivals will not increase market concentration. *Cf.* Indiana Grocery, Inc. v. SuperValu Stores, Inc., 864 F.2d 1409, 1416 (7th Cir. 1989) (price disciplining by firm without individual monopoly power that reduces competition through joint action in oligopolistic market not within Sherman Act). However, when a single firm (or group of firms acting pursuant to agreement) have monopoly power or the dangerous probability of getting it, disciplining predation which inhibits competitive pricing by rivals may intensify or maintain such power, and hence violate the Sherman Act. *See* United States v. E.I. DuPont de Nemours & Co., 351 U.S. 377, 391 (1956) (monopoly power as power to control price); *Indiana Grocery*, *supra* note __, at 1414 (monopoly power as "ability to cut back the market's total output and so raise price.") By contrast in *Brooke* the predatory pricing claim necessarily rested on the Robinson-Patman Act because single firm dominance was lacking and the power to raise prices required the cooperative action of several firms without agreement.

predator might be able to avoid liability by delaying recoupment until risk of suit has passed, perhaps because the passage of time has made it difficult to rebut the claim that other economic conditions caused the price increase.

Consistent with *Brooke*, a sufficiently strong showing of an increased ability to raise and maintain high prices as a result of successful predation could meet the recoupment requirement even in absence of a well-articulated strategic theory. In such a case the evidence will have shown that the alleged predator has excluded a rival from a market with a below cost price, has at least partly recouped its predatory losses subsequently by raising price, and likely will be able to maintain above-cost prices sufficiently long to fully recoup its predatory losses. With such evidence of actual recoupment already in progress, it seems reasonable to *infer* a coherent predatory strategy without requiring the plaintiff to completely spell out and prove the logic of the strategy. The risks of over deterrence in such a case seem minimal since the Supreme Court has made clear that the standard of proof in predatory pricing cases is exacting, and the post-*Brooke* cases show that it is exceedingly difficult to satisfy that standard, absent a persuasive theory of predation.

In contrast, we propose that the evidentiary standard for probable recoupment should be less demanding when proof of the predatory scheme rests on a coherent strategic theory supported by evidence of market structure and conduct. As suggested above, *Brooke* permits such an interpretation because the conclusion of probable recoupment is drawn jointly from the plausibility of the predatory theory and the post-predation market conditions. When, as in *Brooke*, the theory is weak, the post-predation evidence must be stronger.

Where, however, the predatory theory is robust, the post-predation evidence standard should be less exacting, though of course still required. Suppose, for example, that the plaintiff articulates a coherent theory of strategic predatory pricing based on modern economic analysis, that the evidence shows that post-predation market structure and conditions are consistent with the required assumptions of the theory, that the actions of the defendant and other market participants have also been congruent with the theory, and that the plaintiff has been excluded from one or more markets as result of below-cost pricing. With this evidence of post-predation market structure and conduct in hand, it seems reasonable to infer probable recoupment. In this way our proposal extends the existing interpretations of *Brooke* to enable a plaintiff to prove recoupment based on modern strategic theory without having to show actual recoupment.

4. *Price Below Cost*

The final element in establishing a prima facie case of predatory pricing is proof of sales below cost. A cost standard can be faulted as difficult and expensive to prove, and also under-inclusive because prices above cost can be both predatory and injurious to competition.[116] Despite these problems, a cost benchmark is generally necessary for effective business planning for an activity as ubiquitous as pricing. Moreover, since at least 1975, U.S. courts have uniformly followed a cost standard in evaluating predatory pricing.

The cost standards that the courts have most often used are average total cost (ATC) and average variable cost (AVC). Under current U.S. law, a price above ATC is conclusively lawful, while

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[116] *See* Richard Schmalensee, *supra* note ___, at 1021 (above cost pricing based on present costs may exclude dynamically more efficient rival whose costs would fall over time).

at the other extreme, in most jurisdictions a price below AVC is presumptively *unlawful* (assuming the other preconditions of *Brooke* are satisfied).[117] A price between AVC and ATC is either presumptively or conclusively lawful, depending on the Circuit.[118] In Circuits where the price is presumptively lawful, the presumption can be rebutted by other evidence of predation, particularly intent and market structure.[119] However, we shall urge that an incremental cost standard provides a superior measure for assessing predation. Thus, we would substitute average avoidable cost for AVC, and long run average incremental cost for ATC.

This proposal follows in substantial part the recent proposal of William Baumol, who similarly urges substitution of average avoidable cost for AVC.[120] We agree that this should be the lower bound cost test. However, we would add an upper bound cost measure of long run average incremental cost as a substitute for ATC, a proposal originally made by Joskow and Klevorick.[121]. Thus, we adhere to the dual cost approach that many courts presently follow, but we reformulate the cost test to more closely approximate the theoretically correct marginal cost standard.

Average avoidable cost (AAC) is the average per unit cost that predator would have avoided during the period of below cost pricing had it *not* produced the predatory increment of sales. Thus, if the period of alleged predation is 10 months, AAC is the sum of the costs incurred in producing the predatory increment over the 10 month period divided by the quantity produced. It is immediately

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[117] *See* CIRCUIT BY CIRCUIT, *supra* note __ at ch. III; *Brooke*, 509 U.S. at 222-23 (price above ATC is conclusively lawful).

[118] *See* CIRCUIT BY CIRCUIT, *supra* note _ at ch. III.

[119] *See id.*

[120] *See Baumol II*, *supra* note _____, at 58-59.

[121] Joskow & Klevorick, *supra* note_____, at 252 n. 79 and accompanying text.

apparent that AAC is a short run measure because, like AVC, it does not include any sunk costs incurred before the period of predation (since these are not escapable). However, unlike AVC, AAC does not require an often controversial allocation between fixed and variable costs, and also more closely approximates marginal cost since AAC includes all costs that could have been avoided had the defendant not made the predatory sales, whether fixed or variable. Thus, AAC is both easier to calculate and more theoretically correct than AVC.

Long run average incremental cost (LAIC) is the per unit cost of producing the predatory increment of output whenever such costs were incurred. More precisely, the LAIC of a new product is the firm's total production cost (including the new product) less what the firm's total cost would have been had it not produced the new product, divided by the quantity of the product produced.[122] LAIC thus includes all product-specific costs incurred in the research, development and marketing of the predatory product or increment of sales even if those costs were sunk before the period of predatory pricing.[123] In addition, LAIC logically includes any costs incurred to effectuate the predatory scheme, following formation of the predatory strategy. LAIC is a superior cost measure over ATC for a multi-product firm because it does not require courts to allocate joint and common costs, an undertaking which lacks a precise methodology and is particularly unsuited for jury resolution.[124] Moreover, LAIC measures the present worth of the productive assets by replacement cost, and not by historic costs

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[122] *See* Baumol, *Quasi-Permanence of Price Reductions: A Policy for Prevention of Predatory Pricing*, 89 YALE L.J.1, at 9, n.26 (1979), quoted by Joskow & Klevorick, 89 YALE L.J. 213, 252 n.79. Baumol used the term average incremental cost to delineate long run average incremental cost. We prefer LAIC because it specifically identifies the long run factor.

[123] LAIC is in essence a concept of long run avoidable cost since it encompasses any costs that would not have been incurred had the product not been produced.

[124] *See* Joskow & Klevorick, *supra* note at 252 n. 79.

which may give little indication of their current value.[125]

Long run average incremental cost is a necessary benchmark in addition to short run cost because sales below LAIC may reflect a strategy of sacrificing current profit in order to exclude or discipline a rival and thereafter hold price at the monopoly level. Such conduct, if not otherwise explainable, is predatory and a predatory pricing rule that excluded it would be seriously under inclusive.

The risk of under inclusion is particularly acute for intellectual property. A short run cost test provides little protection against predatory pricing involving intellectual property since after the product is developed and launched, AAC or AVC may approach or equal zero. In computer software, for example, the short run incremental cost of a program downloaded from the Internet, is nil. As a result there can be no sale below AAC. An AVC standard does little better since the average variable costs of computer software continuously decline and may approach insignificance as sales volume becomes sufficiently high. Thus, the only tenable cost standard for intellectual property must be a long run cost measure. LAIC is superior to ATC as a measure for intellectual property because LAIC emphasizes that the relevant costs relate to research, development, marketing and production of the predatory product or service, rather than to some larger category of sales.[126]

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[125] 1 A. KAHN, THE ECONOMICS OF REGULATION 77-83 (1970).

[126] An equally important issue in intellectual property, and generally in multi-product firms, is the calculation of price. Does the price include the value of indirect benefits received at a later time? In predation by a single firm the fact that the predator makes increased sales as a result of the current predatory sales would not prevent a finding of predatory pricing if the current sales price is below cost. The same conclusion should follow if predation enables increased future sales *in another market*. Judged in terms of efficiency within the market, such conduct could defeat a more efficient firm. Thus, if a producer of software sells its product below AAC or LAIC, and thereby increases its future sales of a complementary product, the revenues from such enhanced future sales should not be added to the price in determining whether the price is below cost.

Cost Presumptions and Burdens of Proof. Applying these cost concepts, we would treat a price above ATC as conclusively lawful (following Supreme Court precedent), but otherwise we would substitute for ATC, the similar but economically more accurate measure of LAIC. A price below AAC would be presumptively unlawful (assuming the other elements of proof of liability are satisfied). When price is below this level, the defendant would then have the full burden of persuasion to show that the low price was necessary to achieve competition-enhancing efficiencies. Consistent with the standard for proof of liability,[127] the efficiencies defense would be applied from an ex ante perspective: Would a representative firm in the industry have anticipated the conduct to be profit maximizing in the absence of exclusionary effects?

If the predator has priced below LAIC (but above AAC), the burden of proof would be divided between plaintiff and defendants. First, the defendant would have an initial burden of production—of coming forward with some tangible evidence of efficiency or legitimate business purpose. Second, once defendant has offered such an explanation, the burden of persuasion would then shift to the plaintiff to persuade the court that the pricing conduct was predatory.

Placing an initial burden of production on the defendant when price is below LAIC is justified because the first four elements will have established not only that price is below some measure of cost, but also that industry structure makes predatory pricing feasible, specific market conditions facilitate and enable the alleged predatory strategy, the prey has been excluded or disciplined, and as a result the price has increased or is likely to increase. Such a record properly puts some burden of explanation on

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[127] *See* 3 AREEDA & HOVENKAMP, *supra* note___ ¶ 740 (reasonable anticipated costs as test for below-cost sales).

the defendant. At the same time the presence of the specified preconditions mandated by *Brooke* assures that defendants will not be required to justify all challenged price cutting since the preconditions confine possibly suspect price cutting to a narrow range of cases. Moreover, the defendant is well placed to provide such an explanation since it surely has the best knowledge of the efficiencies and business reasons for its actions.

B. *Legal Elements—Efficiencies Justification*

The efficiencies or business justification defense serves as a means of eliminating cases where below cost pricing by a firm with market power is efficiency-enhancing, rather than predatory. In these cases the sacrifice of present profits through low pricing is justified for reasons other than exclusion or disciplining of rivals. The defense thus serves as a necessary shield against an overly inclusive legal rule. The predatory pricing cases have recognized a business justification defense in a variety of factual settings, but have created no clear standards to guide application of the defense.[128]

The burden of proving an efficiencies defense is generally placed on defendants in antitrust cases on the theory that they have superior access to the information, which is under their control.[129] As noted above, [130] in applying our approach, we would place the full burden of proof on the defendant when price is below short run cost. When the price is above short run cost (but below long run incremental cost), defendant would have an initial burden of producing evidence of efficiencies, after

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[128] *See* CIRCUIT BY CIRCUIT, *supra* note _ at 71-76.
[129] *See* 4A AREEDA, HOVENKAMP & SOLOW, ANTITRUST LAW, ¶976d (Rev. Ed. 1998).
[130] *See supra* text accompanying notes ___.

which the burden of persuasion would shift to the plaintiff. Business justifications for below cost pricing may be either defensive and competition-compelled or market expanding.

1. *Defensive Business Justifications*

In defensive price cutting a firm prices below its cost in response to price reductions by its rivals or to market events outside the firm's control, seeking to maintain its competitive position in the market. Examples of defensive price cutting include price reductions that (1) meet the lower price of a rival who initiated the price cutting, (2) minimize losses stemming from unexpected market developments, such as excess capacity, product obsolescence, or shrinking demand, or (3) serve to maintain marketing channels or an ongoing organization, so as to preserve existing options for resumption or expansion of production when market conditions improve.[131]

Unilateral best response. In addition, we would recognize as an additional justification for defensive price cutting a price reduction below LAIC (but not below short run cost) that is a unilateral best response to a competitive price offered by a rival. By a unilateral best response we mean a price that maximizes the incumbent's immediate or short run profit even though its rival remains in the market. Such a price will thus always be above incumbent's short run cost but may well fall below LAIC. Under these conditions the reduced price is simply an independently justified, profit maximizing response to the prevailing market price.[132] Note that the incumbent's price may be profit maximizing

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[131] *See generally*, Edward H. Cooper, *Attempts and Monopolization: A Mildly Expansionary Answer to the Prophylactic Riddle of Section 2*, 72 MICH. L. REV. 375, 437-438 (1974); 3 AREEDA & HOVENKAMP ¶¶ 746,748 (Rev. Ed. 1996); CIRCUIT BY CIRCUIT, *supra* note at 71-76.

[132] We are indebted to Barry Nalebuff for pointing this out.

even if it undercuts the rival's price so long as it remains above incumbent's short run costs.[133] Typically, this is likely to occur when the incumbent has high sunk costs and excess capacity such that its short run costs are very low.[134]

The courts have generally upheld most types of defensive below cost pricing, as compelled by competition. Such pricing benefits consumers in the short run through lower pricing and may promote long run consumer and social welfare in cases where it preserves the price cutter as a competitor or potential competitor in the challenged market. Indeed, the freedom to respond to aggressive price cuts by rivals or to sudden changes in economic conditions may be necessary to give firms the incentive to create and develop markets in the first place.[135]

2. *Market Expanding Efficiencies Defenses*

In market expanding price cutting the firm prices below its cost to promote a new product or

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[133] If the price cut goes below short run cost, it is not likely to be profit maximizing unless it falls within one of the other explicit defenses, e.g. attempt to regain lost customers.

[134] *See* Joskow & Klevorick, *supra* note__ at 253. But such defense would not apply if the incumbent had pursued a deliberate strategy of investing ahead of demand to deter entry. *Id.* at 254. While in a technical sense the price might be above short run costs, that result occurs only as an inherent part of a larger predatory investment strategy, which would not be profit maximizing except on the prospect of eliminating competition. *Cf.* James E. Meeks, *Predatory Behavior as an Exclusionary Device in Emerging Telecommunications Industry*, 33 WAKE FOREST L. REV. 125, 129 (1998) (viewing predatory pricing in strategic terms, dominant firm price cutting that raises entry barriers and harms potential competition is anticompetitive when it appears probable that the low pricing will *not* be maintained if entry is deterred).

[135] The courts appear divided, however, on whether pricing below short run costs is justified in order to meet the lower price of a competitor. *See generally*, CIRCUIT BY CIRCUIT, *supra* note _ at 74-76. *Cf.* ILC Peripherals Leasing Corp. V. IBM Corp., 458 F. Supp. 423 (N.D. Cal. 1978), *aff'd sub nom*; Memorex v. IBM Corp., 636 F.2d 1188 (9th Cir. 1980 (per curiam), *cert. denied* 452 U.S. 972 (1981); Richter Concrete Corp. v. Hilltop Basic Resources, Inc., 547 F.Supp. 893, *aff'd* 691 F.2d 818 (6th Cir. 1982) (below-cost price not predatory so long as it does not undercut rival's price) *with* California Computer Products v. IBM, 613 F.2d 727, 741-42 (9th Cir. 1979); Superturf v. Monsanto Co., 660 F.2d 1275, 1281 (8th Cir. 1981) (price above marginal cost justified to meet competitive price).

In our view, the latter position is correct. A monopoly or dominant firm should not be permitted to sell below its short run costs (which we would measure by AAC) to meet the price of a new entrant or smaller rival. If the rival's price is sustainable, it will almost surely be above short run cost. To allow a predator to price below its short run cost frustrates a market test based on the relative efficiency of the two firms.

enter a new market, entice consumers to shop at an existing outlet, reduce costs through learning-by-doing, or increase the value of its product through network externalities. Such pricing is essentially dynamic in that the price cutter anticipates that lower costs or increased marketing efficiency in the future will compensate for present losses.

Market expanding price cutting raises more difficult issues than defensive price cutting because it involves an aggressive move that may either be procompetitive and output expanding, or injurious to competition, excluding or disciplining rivals. To sort out these differing effects we suggest that a market expanding business justification defense should have three elements:

(1) *Plausible efficiencies gain*. The increased sales resulting from the below cost pricing plausibly increases efficiencies, e.g. reduces cost through learning by doing or other increasing returns to scale effects.

(2) *No less restrictive alternative*. The efficiencies gained cannot reasonably be achieved by a means substantially less restrictive of competition.

(3) *Efficiency-enhancing recoupment*. Recoupment of the investment in below cost sales stems from efficiency-enhancing factors, e.g. higher product quality or lowered cost, rather than from increased profits through eliminating or disciplining a rival.

The defendant would have the burden of proving the first and third elements—efficiencies gain and efficiency-enhancing recoupment. However, the burden to establish the second element—no less restrictive alternative—should be allocated between the parties. In proving the second element the plaintiff would have the burden of identifying one or more plausible less restrictive

alternatives, after which the burden would shift to the defendant to show that such alternatives are either not feasible or not less restrictive.[136]

We sketch three types of market expanding efficiency defenses: promotional pricing, learning-by-doing, and network externalities. These are all dynamic efficiencies that explain how the higher sales resulting from lower prices might increase future profits even with no exclusionary or disciplining effect. Typically they involve new products or new markets. Evaluation of market expanding efficiencies may raise difficult issues of characterization. On the one hand, market expansion provides procompetitive explanations for recoupment of losses from below cost sales. On the other side, the mere presence of these efficiencies does not preclude a coexisting predatory strategy to exclude or discipline rivals. Thus, it is important to show whether dynamic efficiencies alone make recoupment sufficiently probable to justify the losses from below cost prices. Only when this condition holds should we accept an efficiencies defense involving dynamic economies.

a. *Promotional pricing*

A profit-maximizing firm with no exclusionary purpose might temporarily price below its cost in order to induce consumers to try a new product.[137] The firm's expectation is that a favorable consumption experience induced by prices below cost will increase future consumer demand at prices above cost. This might be the case if consumers make frequent repeat purchases or communicate their

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[136] This is consistent with existing requirements for proof of less restrictive alternatives. *See* 7 AREEDA, ANTITRUST LAW ¶1507b.

[137] Promotional economies as an efficiencies defense has been criticized because a dominant firm typically has little need to promote its product by pricing below cost. *See* 3 AREEDA & HOVENKAMP ¶746 (Rev. Ed. 1996). However, we see no reason not to recognize the defense where it is justified and no less restrictive alternative exists, even if such cases are rare.

views of product quality to other consumers by word-of-mouth.[138] The promotional pricing defense is best understood through a hypothetical case.

Illustrative Example: Tasty-Frozen Pizzas. Tasty-Frozen, a leading manufacturer of frozen pizzas, develops a new kind of cheese that retains its flavor and texture much better than other frozen pizzas. The new ingredient is much more expensive than existing cheeses, but test market research shows that consumers prefer the enhanced pizza and would be willing to pay for it. However, test market research also indicates that consumers, distrustful of "new and improved" product claims, are unwilling to try the new pizza if they must pay a higher price. To convince consumers that the new pizza tastes better, Tasty-Frozen considers in-store sampling but this is a costly and likely ineffective marketing device since in-store congestion limits ability to reach consumers. Instead, Tasty-Frozen introduces its new product at the price charged for other frozen pizzas, supported by an intensive three-month advertising campaign. As a result, the price of the new pizza falls below Tasty-Frozen's short run costs (e.g. AIC or AVC).

At the end of the three months promotion, Tasty Frozen raises its price. Consumers remain loyal, having come to appreciate the new pizza's improved taste. While the manufacturer sustains large losses during the three months promotional period, from that time on the firm earns substantial profits from its higher prices and scale economies. Projected sales indicate that Tasty-Frozen will become profitable within a year. Moreover, the company has no incentive to later degrade the quality of its

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[138] Obviously, the firm must have reason to believe that the product would achieve sufficient consumer acceptance to enable it to recoup its losses either by raising price or through scale economies. A necessary condition for this to occur is that consumers would reasonably expect that current product quality indicates continued high quality in the future.

product, e.g. by mixing the new cheese with less expensive standard cheese, because consumers would note the change and no longer be willing to pay a premium. The higher quality of the new pizza has caused many customers to switch from the lower priced brands, and the switch persists even after Tasty-Frozen had raised prices. Indeed, so successful is the new pizza that several of Tasty-Frozen's low price rivals suffer losses and leave the market.

Assume that Tasty-Frozen dominates the frozen pizza market, that brand recognition creates entry and reentry barriers, pricing is below cost, a predatory strategy is plausible (e.g. financial market predation), rivals are excluded, and following the price cutting, Tasty-Frozen raises price, enabling recoupment of its investment in below cost sales. In the absence of an efficiencies defense Tasty-Frozen's pricing conduct appears to raise antitrust problems.

Proof of Efficiencies Defense. The above facts would satisfy each of the elements necessary to sustain an efficiencies defense.

(i) *Plausible Efficiencies Gain*. The below cost pricing has caused consumers to try the new product (and could reasonably have been expected to have this effect). Introduction of the new pizza has improved both product quality and variety, as shown by consumer willingness to pay higher prices after the promotion period; and the fact that cheaper brands of pizza continue to be offered. Thus, successful launching of the new pizza plausibly increases efficiency.

(ii) *No Less Restrictive Alternative*. Success of the new pizza depends on informing consumers of its superior qualities. Sales below cost have induced consumers to try the new product and persuaded them that its improved taste justifies a higher price. Other means to induce consumers

to experience the product, such as in-store sampling, are costly and ineffective. The planned three month period of below cost promotional pricing is no longer than appears reasonably necessary to inform consumers about product attributes. Thus, no less restrictive alternative appears reasonably available to successfully launch the new product.

(iii) *Efficiency-enhancing Recoupment*. Tasty-Frozen raised its price after three months and became profitable after only a year, thereby recouping, at least in part, its investment in below cost pricing. Tasty-Frozen's profit stems from the improved quality of its pizza and not elimination or disciplining of rivals, since competition from existing, lower cost frozen pizzas remains vigorous.[139] Moreover, the manufacturer has a continuing incentive to maintain product quality since quality alone enables it to charge a premium price in the face of continuing competition from lower priced frozen pizzas. Thus, recoupment stems from the efficiency-enhancing improvement in the quality of Tasty- Frozen's pizza.

b. *Learning-by-doing*

The learning curve is an empirical relation showing that unit costs decline with cumulative production experience. The learning curve reflects the idea that learning-by-doing can be an important source of process innovation. In the presence of a learning curve, a profit-maximizing firm might reduce its price below its current cost to increase its production volume without having any predatory purpose. By this means the firm may accelerate its discovery of cost-reducing production methods, recouping its

[139] Even if eventually consumers switch to the new product in such numbers as to exclude lower cost brands, such an informed choice by consumers would be welfare improving.

investment in below cost pricing from increased profit available at a later time.[140]

Proof of Efficiencies Defense. Learning-by-doing induced by below-cost sales may achieve efficiencies gains through earlier discovery of cost-reducing production methods, but it may also have exclusionary effects, which at the limit may create a dominant or monopoly firm. Thus, absence of a less restrictive alternative becomes a key factor in assessing availability of an efficiencies defense. This requires proof that other means of achieving learning curve economies are more costly, for example mentoring by other workers, class room training, process R&D, or producing to inventory. In addition, the period of below-cost pricing must be no longer than reasonably necessary to achieve the learning economies.

Finally, to prove efficiency-enhancing recoupment the firm must show that accelerated production enabled it to achieve important cost savings, and that its rivals, producing at lower volume did not achieve similar cost savings during the same time period. Proof of such facts would tend to establish that below-cost pricing was necessary to induce the savings in production cost.[141]

c. *Network Externalities*.

A network externality occurs when a consumer's valuation of a product increases with the number of other consumers using the product. An example is a telephone network, where the value of

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[140] Learning curve efficiencies could be considered within the cost element of the liability case as a future benefit that augments an otherwise below-cost price. We include it as an efficiencies defense because the complexity of its determination prevents it from being a feasible screen for prima facie liability and because the burden of proof should be on the defendant, who controls the evidence necessary for successful proof.

[141] Ideally, to determine whether the price cutting enhanced efficiency, we would ask whether the pricing would have been profitable in the absence of rival exclusion, but there appears no feasible means for courts to make that determination in a learning curve context. *See generally*, Cabral & Riordan, *The Learning Curve, Market Dominance, and Predatory Pricing*, *supra* note _____.

the network to a user increases with the number of connected telephone users. The procompetitive rationale for below-cost pricing in cases involving network externalities bears similarities to both promotional pricing and learning-by-doing. The rationale is similar to that for promotional pricing because future demand increases with added current sales. The rationale is similar to learning-by-doing because demand depends on cumulative sales.

When network externalities are present a profit maximizing firm might initially price a product below cost in order to establish a large installed base of users, and thereby increase demand for its product. Moreover, the firm might do this for procompetitive reasons and without any exclusionary purpose. Such a procompetitive effect might occur, for example, if (1) the firm had reason to expect that an installed base would significantly increase the demand for its product, (2) a large installed base would increase availability of complementary products and services, augmenting the value of the basic product, (3) as a result, consumers would value the product more highly, enabling the firm to recoup its investment in below cost pricing, and (4) the period of below-cost pricing extends no longer than reasonably necessary to achieve the installed-base network economies. As in the case of learning curve economies, the presence of a less restrictive alternative is likely to be a key issue.

An example of network externalities would be a new battery for electric cars that requires a network of service stations with specialized equipment and service personnel. Assume a new technology is developed by two firms such that each requires its own specially equipped servicing network, as well as specially designed auto engines. Firm A develops its battery a few months earlier than Firm B and obtains initial contracts with auto manufacturers developing a pioneer electric car to

test market in a few cities. Firm A also induces a small number of service stations to buy the necessary equipment and train personnel. When Firm B enters the market, Firm A bids aggressively in each competitive encounter, often bidding below cost. As a result Firm A obtains most of the initial contracts. Since far more cars now have A-type batteries, few service stations are willing to invest in the specialized equipment and training costs for Firm B's batteries. As a result, the market for Firm B's batteries dries up and Firm B leaves the market. Thereafter, Firm A raises prices steeply

This example clearly involves a network efficiency since a large installed base for a particular battery makes servicing available and convenient for consumers. A less restrictive alternative would, of course, have been for Firm A to price above cost. In that event consumers would have had a choice between two battery types and probably lower prices. In retrospect that alternative appears clearly viable in view of the rapid growth of the electric car market. On the other hand at the time of the below cost pricing the potential size of the market was unknown, and Firm A might reasonably have anticipated that the market would support only one type of battery. In that event below cost pricing might have been justified as the quickest path to a viable battery network.

Firm A clearly recouped its investment in below cost pricing, but the recoupment may or may not have been efficiency enhancing. If a single, quickly developed battery network was essential to the success of the electric car, recoupment was efficiency-enhancing. However, if above cost pricing would have led to marketing success for two batteries, the huge recoupment Firm A obtained would be predatory, not efficiency-enhancing. Since counter-factual determinations are always difficult, convincing proof should be required to sustain the predatory finding where, as here, market expanding

efficiencies are plausibly achieved.

IV. FINANCIAL MARKET PREDATION

A. *Economic Theory*

Financial market predation is not to be confused with traditional deep pocket predation. The deep pocket theory in its original form held that a richly endowed predator would charge low prices to drive out a poorly endowed rival.[142] This simple form of the theory is no longer accepted except in certain regulatory applications[143] because it ignores the possibility that profit-seeking investors would finance the prey. Thus, in the general case, we must assume that capital markets are open to a profitable prey, and allow that external financing could foil predation.

Accordingly, modern strategic theory focuses on the relation between the prey and its investors.[144] The predator seeks to manipulate that relationship and thereby drive the prey out of the market or deter its expansion into new markets. A predatory strategy becomes viable because of capital market imperfections. In supplying capital, investors face agency or moral hazard problems arising because the managers of the firm may take excessive risks, shield assets from creditors, dilute outside equity, fail to exert sufficient effort, or otherwise fail to protect investors' interests.

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[142] *See* Paul Milgrom & John Roberts, *New Theories of Predatory Pricing*, *supra* note __, at 112, 119 (predation based on having larger war chest).

[143] *See* W. KIP VISCUSI, JOHN E. HARRINGTON, JR., ECONOMICS OF REGULATION AND ANTITRUST 532-33 (2d ed. 1995), (cross-subsidization of below cost pricing in one market by setting regulated price in second market above socially efficient level).

[144] Patrick Bolton & David Scharfstein, *A Theory of Predation Based on Agency Problems in Financial Contracting*, 80 AM. ECON. REV. 93 (1990) [hereafter *Bolton & Scharfstein (1990)*]; Drew Fudenberg & Jean Tirole, *A Signal Jamming Theory of Predation*, 17 RAND J. ECON. 366 (1986).

Suppliers of capital can mitigate these agency problems by extending financing in staged commitments, thereby imposing an explicit or implicit threat of termination in case of poor performance.[145] If the investors are debt-holders, they threaten to liquidate the firm or deny new credit in the event of default. If they are venture capitalists they refuse to extend additional financing when early performance is poor. And if they are shareholders, they decline to purchase additional equity if expected returns are low due to disappointing initial performance. Predatory pricing in product markets thus becomes possible when a predator exploits these termination threats to dry up the financing of a rival firm.

Admittedly, termination threats are blunt instruments and investors in principle could shield themselves more effectively by making the financing contract dependent on the firm's realized profits in a more discerning way. But generally, more sophisticated contractual agreements which attempt to discriminate between different causes of poor financial performance fail because the firm's accounting profit is manipulable and therefore not reliable. The true economic profit of the firm is not perfectly observable by an outsider, and even if it were, it could not be verified by a court sufficient for use as a condition in a financing contract.

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[145] Agency problems limit the ability of outside investors to appropriate the returns from a project and thus may prevent the financing of otherwise efficient firms. Implicit or explicit termination threats mitigate agency problems by making continued financing dependent on repayment obligations or collateral. If the firm fails to meet repayment obligations, then creditors have the right to liquidate the firm. Such liquidation potentially destroys a profit stream to which the firm would otherwise lay claim. Less drastically, the liquidation threat may enable the lender to claim a greater share of these continuing profits through renegotiation of the terms of the loan. In either case, the firm's incentive to retain a claim on a continuing stream of profits provides an incentive to the manager to make efficient decisions and meet repayment obligations. *See Bolton & Scharfstein (1990)*, *supra* note _ at 99-100.

Agency problems are particularly acute in the financing of new enterprises. Typically, there is great uncertainty about cash flow in the beginning stages of a new enterprise. Investment in a new or expanding firm may encounter initial losses or lower than expected profit. These losses may be unavoidable start-up costs, never fully foreseeable, or may be due to agency abuse. Lenders can mitigate moral hazard problems by requiring collateral and by agreeing to extend financing (in staged commitments) only when the firms' initial performance is adequate. In many instances lenders commit explicitly to further financing, contingent on verifiable performance (as in venture capital contracts), but more commonly the agreement to extend additional financing is implicit [146]. When the promise of new financing is implicit, firms can only obtain new funding if the new investment is perceived to be sufficiently profitable by the lender and if the lender has adequate protection against agency abuse. Thus, to obtain additional financing in a later period, the borrower must be able to put up a significant fraction of its own capital as collateral, as well as meet its existing financial obligations.

Financial contracts that guard against agency abuse may invite predation. A predator may slash price to drain the prey of sufficient funds to meet its loan commitments, thereby forcing default. Less drastically, the predator may be able to lower the prey's earnings and thus to impair the prey's debt capacity by limiting the amount of collateral it can put up. In addition, reduced earnings exacerbate

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[146] *See* Jeremy Bulow and Kenneth Rogoff, *A Constant Recontracting Model of Sovereign Debt*, 92 J. POL. ECON. 155-78 (1989); Douglas Diamond, *Reputation Acquisition in Debt Markets*, 97 J. POL. ECON. 829-862 (1989); Oliver Hart and John Moore, *A Theory of Debt Based on the Inalienability of Human Capital*, 109 QUART. J. ECON. 841-79 (1994); Jonathan Thomas and Tim Worrall, *Foreign Direct Investment and the Risk of Expropriation*, 61 REV. ECON. STUD. 81-108 (1994).

future agency problems by forcing the prey to pledge a bigger share of future profits to its' outside investors and creditors. As a result the firm's manager would have less incentive to maximize profits. Finally, lower earnings may cause the lenders to wrongly believe that the firms' profits are likely to be lower or riskier in the future and therefore to stiffen their lending terms.

It might at first appear that a lender could easily counter predation by agreeing to finance the prey irrespective of its ability to meet scheduled loan repayments; and that the predator, anticipating the lender's counter strategy, would realize that financial predation cannot succeed. However, a lender will not ordinarily make such a commitment because to contribute funds to a debtor in default provides no restraint on agency misconduct[147].

Nor can lenders solve the financing problem by excusing default when caused by predatory pricing. The lender may be unable to determine whether the default stems from predatory pricing or from the debtor's poor performance because the lender lacks both full information and the expertise available to a market insider. Even if the lender could so determine, the courts can verify that determination only through a costly and inherently uncertain legal proceeding that few lenders would

[147] In an attempt to forestall predation, lenders may write financial contracts that are less sensitive to performance, as is shown in *Bolton & Scharfstein (1990), supra* note __ at 102, but they will not choose to make the contract independent of performance even if renegotiation of the loan contract is permitted. *See also* Christopher Snyder, *Negotiation and Renegotiation of Optimal Financial Contracts Under the Threat of Predation* , 44 J. INDUS. ECON. 325 (1996).

wish to confront.[148] Thus, the lending agreement cannot feasibly include a commitment based on the future occurrence of predatory pricing. And in the absence of such commitment the lender may not want to extend lending in the event of predation. [149]

All this places the lender in a dilemma. If the lender provides a continuing supply of funds sufficient to deter predation, it invites agency misconduct. On the other hand, if the lender attempts to impose financial discipline on the firm with repayment obligations and collateral requirements, it may induce predation. There is no fully satisfactory solution to the dilemma. Indeed, the lending contract that minimizes agency problems will maximize the incentive to prey.[150] Since lenders can scarcely afford to ignore agency problems in writing financial contracts, predation potentially remains a viable strategy. The inability of creditors to write optimal financing contracts in the presence of predation raises the costs of debt and lowers the return on new enterprise, thereby inhibiting the development of new competition and possibly reducing economic welfare. In a very real sense capital markets have failed since these adverse effects follow even when it is common knowledge that new entry by an efficient firm would be profitable in the absence of predation.

Perhaps the most insistent critique of a predatory pricing strategy is that even if the prey is

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[148] The lender's right to funding would depend on the court's determination (1) that predation occurred—a complex and difficult issue to prove—and (2) that the debtor's predatory losses caused the default, as distinct from other factors.

[149] Moreover, there is the continuing risk that market conditions may have changed, making lending less attractive, such as a rise in the opportunity cost of credit, or lenders may have formed a more conservative estimate of revenue streams. Such developments, together with continuing agency problems means that new credit may not be forthcoming to finance a profitable project.

[150] Contrariwise, the loan contract that minimizes predatory risk would maximize agency problems. Thus, the lender can at best compromise between the two goals.

forced to exit the market, the predator has accomplished nothing because the prey's assets remain in the market. Indeed, if the prey's assets are sold at a low price, then the successor may have a lower debt burden and therefore greater access to capital markets and a lower cost of capital than the defeated prey. Thus, it is argued, the predator now faces a stronger and better financed rival than before, thus making recoupment unlikely. This critique is flawed for reasons we discuss in some detail in Part VII below. Foremost amongst the flaws are the likelihood that the acquired assets may be insufficient for the successor to achieve a viable scale, and that attempts by the successor to gain additional financing may be plagued by concerns about continuing agency problems and further predation.

A related critique is that acquisition of the prey by a well endowed creditor would preclude financial market predation. However, creditor acquisition of the prey is generally not feasible because agency costs and measurement ambiguity frequently prevent the creditor from ascertaining the true profit of the prey, and thus determining whether in the absence of predation, the prey is profitable. Even if the creditor can observe the prey's profitability, it typically lacks the specialized expertise to manage the prey. If the creditor attempts to gain the needed expertise, it may not succeed, and at the very least faces a time lag, during which it will sustain additional losses. It might be objected that the creditor is in no worse position than the predator. But this objection neglects the fact that the predator is an insider, while the creditor is a market outsider. Thus, the possibility of creditor acquisition of the

prey will not always bar financial predation.[151]

A final possible avenue to further financing is bankruptcy reorganization, which involves compromise and subordination of loans to give the bankrupt a chance to work itself out of insolvency, under judicial supervision. But the inability to make additional financing arrangements dependent on profit confronts new creditors with the same contracting limitations that stymied the original creditors.[152] Nor can new creditors rely on the bankruptcy court to effectively constrain agency misconduct by the bankrupt debtor. U.S. bankruptcy reorganization procedures do little to protect against debtor or management misconduct. There is no trustee and no SEC supervision. The old management often remains in control both during and after reorganization under the broad permissiveness of the business judgement rule, and the reorganization plan is almost always that of the debtor.[153] The court does not

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[151] Nor does venture capital financing provide an effective answer to financial predation. Venture capital loan agreements often give creditors managerial participation rights and board of directors representation, particularly in the event of default. But it does not follow that the venture capital fund will be willing to provide substantial additional funding to shore up a predatory victim. Fund investors typically contribute capital in staged increments, limit the fund's investment in any single enterprise, and insist on broad diversification to reduce the high risks of new enterprise investment. These limitations inhibit the fund manager from attempting to defeat a predatory strategy by buttressing the prey with additional funds when its performance is poor. That is to say, there is an agency problem in the management of the venture capital firm itself that constrains the firm from adopting a predatory counter strategy by pouring additional money into a losing investment.

[152] One might speculate that an additional source of liquid capital is the prey itself, which conceivably could accumulate funds through agency misconduct during the previous financing period. More specifically, the prey may default on its loan, become insolvent or bankrupt, and then use funds siphoned off before default to generate its own internal financing or to attract new external financing (and thereby foil predatory pricing). This scenario appears unlikely, however, since the original financing contract is designed to avoid such managerial behavior. As we have seen, the lending contract can be written to supply funds in relatively small increments, with each increment payable only after the debtor has paid the previous loan installment. Thus, recourse to entirely new financing would be necessary to sustain the prey, and a new creditor is unlikely to find lending attractive to a borrower with such a credit history.

[153] *See* 7 COLLIER ON BANKRUPTCY ¶ 1100.01 (15th ed. rev.). Notwithstanding reorganization, the debtor has broad discretion in the ordinary course of operation of business and is constrained generally only by a business judgment rule; *see also* EPSTEIN, NICKLES & WHITE, BANKRUPTCY § 10-6 (1993).

supervise the reorganized firm, but acts essentially as an arbiter between conflicting interests.[154]

B. *Proof of Financial Predation Strategy*

Proof of a plausible strategy of financial market predation would require a showing of five essential preconditions or enforcement screens. Fulfilment of these preconditions would establish that financial predation could be a viable predatory strategy. Of course proof that financial predation is a viable strategy does not establish an antitrust violation. Proof of violation would require proof of all of the elements set forth in our proposed rule. The preconditions are as follows:

1. *The prey depends on external financing*. Dependence on outside funding creates agency problems and contractual responses that expose the prey to predation. Such dependency is the typical condition of the new or expanding firm, as vividly seen in venture capital financing.

2. *The prey's external financing depends on its initial performance*. This is an essential condition because unless the prey's financing depends on initial performance, the financial relationship between the prey and its investors and creditors would be insensitive to a strategy of price predation. Cash flow is the most obvious performance indicator on which outside investors are likely to focus. Lending contracts requiring repayment or increased capital contributions over staged intervals are a common form of financing that exhibits the requisite dependence on cash flow. Similarly, new investors

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[154] We are indebted to Walter Miller for advice on bankruptcy reorganization. *See* Walter W. Miller, *Bankruptcy's New Value Exception: No Longer a Necessity*, 77 B.U. L. REV. 975, 1005-06 (1997).

would be discouraged by lower than expected cash flow. In some cases, external financing might depend on other performance indicators beside cash flow, such as revenues or initial market penetration.

3. *Predation reduces the prey's initial performance sufficiently to threaten the prey's continued financing and viability.* Predatory risk must be of sufficient magnitude and probability to affect the supply of further financing, thereby threatening the prey's financial viability. These conditions reasonably would be present in many cases, and might be demonstrated by the prey's business plan.

4. *The predator understands the prey's dependence on external financing*. Perhaps an obvious point, the predator must know that the prey's viability depends on outside funding, or can be assumed to know, based on easily accessible facts or rational conjecture. Sometimes this may be common knowledge, as in airline markets, where all firms require outside funding to finance aircraft purchases.[155] Alternatively, funding dependency may be disclosed in public SEC filings or discoverable through simple investigation. In other cases knowledge may be inferred from the predator's conduct or its internal documents.

5. *The predator can finance predation internally or has substantially better access to external credit than the prey*. This is a necessary assumption because unless the predator has superior access to credit or internal funding, it would face agency risks and resulting financing

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[155] Michael E. Levine, *Airline Competition in Deregulated Markets: Theory, Firm Strategy, and Public Policy*, 4 YALE J. ON REG. 393, 436 (1987).

constraints similar to those that confront the prey.[156] Indeed, the predator might face greater difficulties in obtaining outside funding if predation proved more costly for the predator than the prey. As in the case of the prey, agency and verifiability problems would impede financing notwithstanding the ultimate profitability of the predator's conduct. It is reasonable to assume, however, that the predator, typically a monopoly, dominant firm or dominant group of firms, will be less highly leveraged than the prey (and thus raise less agency risk for the creditor). As a result, the predator faces little danger of credit cut-off or reduction of supply, while the prey will be more inhibited by the prospect of a price war[157].

C. *Illustration: Cable TV*

A recent case study,[158] involving entry into the cable TV market in Sacramento, California provides a vivid context in which to illustrate application of the strategic approach to financial predation. We first briefly describe the facts, and then apply our suggested elements of proof.

(i) ***Factual Summary***

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[156] *Cf.* Judith A. Chevalier, *Capital Structure and Product-Market Competition: Empirical Evidence from the Supermarket Industry*, 85 AM. ECON. REV. 415, 433-34 (1995) (highly leveraged supermarket chains priced non-aggressively).

[157] An additional condition might be added for widely held firms requiring that the managers' interests in pursuing a predatory price war be aligned with the long term interests of shareholders. Short of that, the objection could be made that subordinate managers might be unwilling to carry out a top management or controlling shareholder's decision to predate. See JOHN C. LOTT, JR. *supra* note __. But such a failure of internal controls within the firm is unlikely in view of the many ways superior managers or concentrated control groups may reward or punish subordinate managers. Moreover, the presence of objective facts showing a scheme of financial predation and supporting evidence, exclusion of rivals, probable recoupment, and below cost pricing should convincingly refute any claim that agency problems prevented predation. Hence, proof of such an internal agency problem should be left to affirmative proof by the alleged predator in the rare case where it might arise. *See infra* text accompanying notes ___ for a more detailed discussion.

[158] Thomas W. Hazlett, *Predation in Local Cable TV Markets*, 40 ANTITRUST BULL. 609 (Fall 1995) [hereafter *Hazlett article*].

The monopoly cable system operator in Sacramento drastically cut price in response to successive entry attempts by two small rivals, both of which subsequently left the cable market, after which no further entry occurred. The second attempt was much better financed and persisted longer, and we confine discussion to this more substantial effort. Entrant began with outside financing amounting to $6 million,[159] which enabled it to overbuild a compact area (the Arden district) serving 5000 homes in Sacramento. This was the first step in a larger plan to build out gradually to challenge the incumbent over a 400,000 home market. Entrant sunk its initial investment, completed its underground conduits and cables and began to recruit customers.

Incumbent responded with drastic price cutting (and other predatory tactics). At least partly as a result of the price cutting, entrant was able to sign up only a handful of customers, and abruptly halted its effort to connect additional customers after only eight months. For a time entrant continued to serve the small core of customers it had succeeded in connecting, but eventually shut down its wired cable system, abandoning non-recoverable investment approaching $5 million. Entrant filed suit claiming predatory pricing,[160] and the case was settled during trial for $12 million.[161] After its wired cable business became dormant, entrant successfully entered the Sacramento market by building a microwave transmitter, but its exclusion from the cable market had a significant impact on competition (as discussed below). We now show how we would apply our suggested elements of proof to these

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[159] Tel. conf. with Robert M. Bramson (attorney for entrant) on August 19, 1997 [hereafter *Bramson interview, Aug. 19,1997*]

[160] Pacific West Cable Company v. Sacramento Cable Television, No. 88-985 (D.Cal. filed Aug. 4, 1988).

[161] Tel. interview with Robert M. Bramson on February 5, 1999 [hereafter *Bramson interview, Feb. 5, 1999*].

facts.

(ii) ***Proof of Case***

(A) MARKET STRUCTURE FACILITATING PREDATION

The incumbent held a monopoly of cable system service in Sacramento. It was subject to competition from microwave, but this was inferior in quality and severely limited in the number of channels.[162] Incumbent's monopoly power was probably also signalled by the high return on investment relative to replacement cost for cable TV firms.[163] Substantial entry barriers existed in the form of high sunk costs, as well as regulatory hurdles. Incumbent's ability to raise prices in the Arden sub-market after entrant withdrew would indicate reentry barriers (at least following successful predation).

(B) SCHEME OF PREDATION AND SUPPORTING EVIDENCE

The facts of the case provide a vivid illustration of the relevance and explanatory power of modern strategic theory—here financial predation. Proof of recoupment is established by a showing that recoupment is plausible under soundly based economic theory and by evidence of actual effects

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[162] Wired cable would comprise a separate market for antitrust purposes capable of being monopolized if a monopolist in that market could raise prices significantly above the competitive level. The high return on investment in cable TV systems (presumably also high in Sacramento) would tend to show market power, as would the fact that incumbent raised prices in the Arden district after entrant withdrew from cable. While the case study does not discuss the issue, perhaps entrant's subsequent entry into microwave constrained prices in the cable market, but this seems improbable. Entrant achieved limited market penetration through microwave (10 percent) as compared with projected cable penetration (35 percent penetration estimated for competitive entry). Thus, it appears likely that a substantial group of consumers with strong preference for cable remained to be exploited.

[163] *Hazlett article*, *supra* note _ at 611-12 (cable systems "notably monopolistic" with market value 2.5 to 6 times capital costs).

making recoupment probable in the light of that theory. The evidence clearly shows that each of the preconditions for financial predation was present.

(1) *The prey depends on external financing.*

Entrant began operations with $6 million in capital. The firm obtained the funds through a loan, personally guaranteed by its owners, who included two wealthy real estate developers. This financing sufficed to build an initial system serving 5000 homes. The costs of expanding to cover any significant part of the Sacramento market, of which this represented barely one percent, would be staggering, and clearly would require additional external financing. While the two principal investors were quite wealthy, they were essentially passive investors and were reluctant to risk additional funds in a business in which they had no prior experience. Instead their business plan was to rely on bank financing to raise the capital necessary to overbuild the Sacramento market.[164]

(2) *The prey's external financing depends on its initial performance.*

In addition to their initial $6 million contribution, the two principal investors had obtained a line of credit from a consortium of banks to build into other geographic areas. Credit was easy to obtain due to the great wealth of the principals, but as indicated they were reluctant to risk their personal assets at risk beyond their initial investments and loan guarantees. The investors' unwillingness to draw

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[164] *Branson interview, Aug. 18, 1997 supra* note _, and Telephone interview with Thomas W. Hazlett (expert economic witness for entrant) ON AUGUST 18, 1997 [hereafter *Hazlett interview*]. In addition, one of the principal investors was a co-owner of an NBA basketball team (the Sacramento Kings) and also the Sacramento Sports Association, which the investors thought might give entrant an edge in obtaining sports programming. 4 *The Bus. Journal—Sacramento* (No. 36; Sec. 1, p. 21 (Dec. 7, 1987)).

further on personal assets meant that expansion relied on other sources of financing, the availability of which depended on the prey's initial performance. A positive cash flow from entrant's initial operations was potentially a source of internal financing and collateral for bank financing.

(3) *Predation reduces the prey's cash flow sufficiently to threaten the prey's continued financing and viability.*

The incumbent's actions limited entrant's initial customer base to 170 homes, far below the 25-30 percent penetration needed to break even.[165] As a result of this "pitifully low penetration" entrant's cost of capital was "climbing precipitously."[166] The incumbent's drastic price cutting convinced the principals that additional financing would require use of their personal credit. The investors did not attempt to draw on their line of credit, but instead abandoned efforts to extend the system, despite their sunk investment.[167] Entrant became a far riskier investment as a result of its low cash flow, and in the judgement of its principal investors could not obtain outside funding on the strength of its own credit and future potential.

Instead entrant simply maintained a holding operation, continuing to serve its handful of connected customers and eventually shut down its underground cable operation, into which it had sunk $5 million of non-salvageable investment.[168] Of course, other factors might explain the entrant's

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[165] *Hazlett article*, *supra* note _, at 619.

[166] *Hazlett article*, *supra* note _, at 620; *see also Branson interview, Aug. 18, 1997*, *supra* note __.

[167] *Bramson interviews, Aug. 18, 1997*, *supra* note __ and *Feb. 5, 1999*, *supra* note _; *Hazlett interview*, *supra* note. It is of course possible that the investors had a change of heart about the project's viability, but this seems unlikely since their business plan from the beginning had been to obtain bank financing, without recourse to their personal assets.

[168] *Bramson interview, Feb 5, 1999*, *supra* note __.

abandonment of the cable market, such as changes in expected profitability, the superiority of microwave as a vehicle for challenging an established cable TV system, or a general tightening of credit availability. The case study notes only the latter condition—tightening of credit—but makes clear that the incumbent's predatory campaign severely reduced entrant's cash flow, and hence its continued financing and viability.[169]

(4) *The predator understands the prey's dependence on external financing.*

This element is easily satisfied since the facts showed that the incumbent was attempting to raise entrant's cost of capital so as to exclude entrant as a rival and to deter further entry. The whole purpose of the incumbent's price cutting strategy was to raise the entrant's cost of capital and discourage future contributions from its investors.[170] Indeed, an internal memorandum from the incumbent's files assesses the entrant's financial resources, focussing on the net worth of its two principals, comparing this with the resources of a previous entrant who had also abandoned the market after severe price cutting by incumbent.[171] More striking still, another memorandum from incumbent's files speaks of sending a message to entrant's bankers.[172]

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[169] At trial the defendants raised the financing issue, arguing that the entrant would have been unable to obtain bank credit because of increased credit costs, liquidity problems and depressed real estate. However, according to entrant's attorney and its economist, these economic conditions did not arise until after the project had been abandoned. Consistent with that assertion, defendant offered them in mitigation of damages, not as a liability defense, claiming that over the next four or five years when the system would have been built, financing would not have been possible; and thus that entrant's damages were limited. *Bramson interview, Feb. 5, 1999*, *supra* note __; *Hazlett interview*, *supra* note __.

[170] *See Hazlett article*, *supra* note _, at 621.

[171] Interoffice memorandum from incumbent's files, dated May 31, 1998 (Court document on file with U.S. District Court in Sacramento, California).

[172] *Hazlett interview*, *supra* note _.

Moreover, incumbent knew that to overbuild a significant part of the Sacramento market would take huge amounts of capital and that the entrant's main source of external funds was its individual investors. Incumbent could reasonably conjecture that the initial investors, with no experience in cable, would be unwilling, if not unable, to make such a large commitment without additional external financing. Incumbent also could reasonably conjecture that possible bank financing would depend on the cash flow generated by entrant's initial operations.

Finally, the fact that entrant abandoned its effort to develop its existing cable market after only a few months of losses confirms the unwillingness of the entrant and its principals to commit additional capital even to develop a market area where they had large sunk investment. If entrant and its investors were not prepared to do that, they would surely have been unwilling to make additional sunk cost investment to expand beyond the its initial sub-market.

(5) *The predator can finance predation internally or has substantially better access to external credit than the prey.*

Incumbent clearly could finance the predation internally. It spent only $1 million on its predatory campaign.[173] Such an expenditure by a profitable monopoly serving a market of 400,000 homes, would clearly appear to be within its internal funding capability. This conclusion is not diminished by the fact that it was almost wholly owned by Scripps Howard, a strong and well-financed national newspaper chain.

(C) PROBABLE RECOUPMENT

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[173] *See Hazlett Article, supra* note _ at 642.

Proof of recoupment requires ex post evidence that the alleged predatory pricing (1) excludes or disciplines rivals or potential rivals, and (2) thereby injures competition and consumers by enabling the predator to raise prices or lower quality, or dangerously threatens to do so. The two effects are related in that the exclusion or disciplining of rivals is the instrumentality by which competition and consumers are harmed.

While there was no specific evidence showing that the predator fully recouped its predatory losses through higher post-acquisition prices, other evidence overwhelmingly pointed to probable recoupment, taking into account the plausibility of the strategic theory of financial predation, the fact that the pre-entry price was a monopoly price which predation restored, and the future losses predator avoided by preventing competition.

Exclusionary Effect on Rivals. The evidence showed that the incumbent's drastic price reductions excluded or was capable of excluding the entrant. Incumbent's below-cost prices had severely limited entrant's cash flow by limiting its customer base to an insignificant level, raised its costs of capital, blocked its perceived ability to obtain additional capital, and as a result caused entrant to cease expansion beyond its tiny customer base of 170 homes and eventually to shut down altogether. Following incumbent's drastic price cutting, aggressive marketing and enhanced service, entrant first halted all expansion and then withdrew from the cable TV market. Such withdrawal caused it to lose the bulk of its $6 million investment in the Arden sub-market. Most of entrant's investment in that market was non-salvageable. Entrant of course preserved an option to reenter the Arden cable sub-

market, but it seems reasonable to conclude that entrant lost most, if not all, of its original investment.[174] Perceiving its inability to obtain external financing, entrant abandoned its plan to overbuild the Sacramento market[175].

While we lack the data to fully reconstruct the facts bearing on exclusion of the prey, it appears that entrant's losses and its foreclosure from credit markets were substantially caused by incumbent's price cutting. Since the case was settled during trial, the causation issue cannot be definitively resolved. However, according to the information we have received from counsel and an expert witness the tightening of credit and other possible non-predatory causes had not yet occurred at the time of the violation, but came later.[176] Under these assumptions, it appears likely that the incumbent's predatory strategy substantially deterred additional investment, and thus was a material cause of plaintiff's injury[177].

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[174] Entrant continued to use its small cable system in the Arden sub-market until the trial and settlement, but shortly thereafter stopped service. Subsequently entrant sold its cable assets together with its microwave operation. It appears that the purchaser abandoned the cable system. *Bramson interview*, Feb. 5, 1999, *supra* note _.

[175] The entrant did subsequently enter the Sacramento market via microwave, and it is conceivable that entrant abandoned the cable market because it concluded that microwave would be more profitable. But that business decision likely was affected by the incumbent's predatory campaign. The fact that microwave was an inferior technology (much less channel capacity, line-of-sight difficulties and weather sensitivity) suggests that it was a second choice investment. The main advantage of entry by microwave may simply have been that it was less susceptible to predation. A microwave system required only one transmitter, and once that investment was sunk, the entrant would have the incentive to remain in the market so long as price exceeded incremental cost for the entire system. By contrast the sequential nature of the sunk cost investment in building a cable system made it especially vulnerable to predation

[176] *Bramson interview, Feb. 5, 1999, supra* note _; *Hazlett interview, supra* note _. Assuming the correctness of this information, the tightening of future credit could affect the magnitude of damages since it might constrain future financing of the entrant. But it would not bar liability for the credit foreclosure that occurred at the time of violation and that led entrant to abandon expansion plans before the credit tightening had occurred.

[177] It is of course possible that other factors may have contributed to entrant's inability to obtain financing and its decision to leave the cable TV market, as discussed previously. However, proof of exclusionary injury to the antitrust victim does not require a showing that predation was the exclusive cause of the plaintiff's injury. It suffices to show under varying judicial formulations that predation was a "material cause," "a substantially contributing factor," or "among the more important causes." 2 PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶ 363a (Rev. Ed. 1995).

Injury to Competition and Consumers. Injury to competition and consumers requires a showing that the predation raised prices or lowered quality sufficient to enable probable recoupment, or created market conditions that made such effects probable. The evidence shows that incumbent after having successfully withstood two entry attempts, regained its complete monopoly of the Sacramento market, and hence the ability to price without constraint of actual competition. Moreover, following entrant's exit from the Arden sub-market, incumbent promptly withdrew many discounts and special services it had offered during the period of rivalry, and after two years cancelled its entry-induced lower rate in the Arden district.[178]

Perhaps the most significant evidence of recoupment, however, was the incumbent's avoidance of the losses it would otherwise have faced from competition—an issue neglected in *Brooke*. By its own estimate incumbent's successful effort to defeat new entry had avoided losses of $16.5 million per year, with a predatory expenditure of only about $1 million.[179] Moreover, no further entrants sought to enter the Sacramento market, after the initial two entrants were rebuffed.[180]

The fact that the predator was able to recapture its total monopoly of the Sacramento market, even standing alone, appears to satisfy *Brooke*'s criterion of increased concentration and entry barriers making recoupment probable. But even if this factor had not been present, the other evidence of market structure, conduct and effects, illuminated by the soundly based theory of financial predation (as contrasted with the more speculative theory in *Brooke* of recoupment by parallel action without

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[178] *Hazlett article, supra* note _, at 623.
[179] *Id.* at 619, 642.
[180] *Bramson interview, Aug. 19, 1997, supra* note _.

agreement) might have justified the finding of probable recoupment. No longer threatened with competition from a significant entrant, the predator's market power was predictably enhanced.[181] Incumbent's predatory attack caused entrant to abandon its plan to overbuild the Sacramento market and instead to enter on a more limited basis with an inferior technology.

In addition, it is possible that incumbent's action created a reputational barrier to entry discouraging future potential entrants. We discuss reputational barriers in Part V below.

(D) PRICE BELOW COST

The case study does not analyze the issue of below cost pricing, but price appears to have been well below ATC and, at least for some sales, may have been below average variable costs as well. Predatory pricing and related marketing efforts to prevent entrant from gaining a viable customer base, cost the incumbent $15 per subscriber per month, which amounted to half of incumbent's total revenue.[182] Operating costs in the cable TV industry comprise 55 percent of total cost; and the overall industry profit margin is only 20 percent on revenues.[183] A 50 percent rate reduction plus other valuable allowances could well push price below short run costs. In any event, sales to some customers were below any measure of cost since incumbent reduced its monthly rate in the Arden sub-market to $1 per month for basic service with free installation for customers who were resistant to signing up with incumbent and free color TVs for customers who had signed up with entrant.[184] Thus, it

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[181] It could be argued that because entrant's cable facilities remained in the ground that reentry barriers were low, but successful entry requires other factors beyond the cable facilities, such as programming sources where economies of scale exist. In addition, the reputation effect created by the successful predation might itself serve as a barrier to entry.

[182] *Hazlett article, supra* note _ at 619 (estimated cost projections by incumbent).

[183] *Hazlett interview, supra* note _.

[184] *Hazlett article, supra* note _ at 618, 620.

appears that prices were below both ATC (and long run incremental costs), and at least some prices were below average variable cost (and average avoidable costs). [185]

(E) EFFICIENCIES DEFENSE

The case study contains no evidence supporting an efficiencies defense. But incumbent would be permitted to show that it had a legitimate business purpose for cutting prices below cost. Generally, this would require it to establish that the conduct was profit maximizing in absence of an exclusionary or competition-reducing effect.[186]

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[185] In our proposed cost analysis the inquiry would focus on long run average incremental cost (LAIC) and average avoidable cost (AAC). Price would clearly have been below LAIC since this would include not only operating costs but any fixed costs incurred in waging the predatory expansion, such as connection of new or switching customers and predatory promotional costs not tied to specific sales. Price might also have fallen below AAC because the full operating costs and sale-specific promotional costs would have been avoidable if incumbent had not made the predatory sales.

[186] Additional examples of industries where market conditions would have made financial predation a viable strategy include Gabel & Rosenbaum, *Prices, Costs, Externalities and Entrepreneurial Capital: Lessons from Wisconsin*, 40 ANTITRUST BULL. 581 (Fall 1995); Josh Lerner, *Pricing and Financial Resources: An Analysis of the Disk Drive Industry, 1980-88*, 78 REV. ECON. & STAT. (1995) (computer disk drives); Michael E.Levine, *Airline Competition in Deregulated Markets: Theory, Firm Strategy, and Public Policy*, 4 YALE J. REG. 393 (1987) (airlines); Fiona Scott Morton, *Entry and Predation: British Shipping Cartels 1879-1929*, 6 J. ECON & MGMT. 679 (1997) (ocean shipping); Weiman & Levin, *Preying for Monopoloy?: The Case of Southern Bell Telephone*, 102 J. POL. ECON. 103 (1994) (telephones); A & P, HARVARD BUSINESS SCHOOL SERVICES (1974) (grocery chains).

The airline industry provides a particularly vivid example where market conditions facilitated predation.. Following deregulation, repeated entry attempts by new airlines and small expanding airlines provoked fierce price wars, ending in almost all cases in the entrant's exit or its confinement to niche markets. Airlines must invest large amounts to acquire or lease aircraft and support facilities. This generally requires heavy borrowing. Because the business is risky and cyclical, lenders face difficulty in assessing borrowing risk. Lending is further complicated by agency risk in determining the future profitability of the borrower and controlling its conduct once the loan is made. The lending problem is likely to be acute for the new or recently established airline, which lacks a borrowing record. The entrant will be more dependent on outside funding than the incumbent because the incumbent can generate strong cash flow from the many markets not involved in the price war, while entrant may face competition in all or most of its markets. Moreover, lenders are reluctant to finance participants in price wars because of the difficulty of predicting outcomes (and because of the agency problems discussed earlier). Thus, the entrant's staying power is limited, as compared with the incumbent. For the same reasons the incumbent will also have greater access to outside funding. Strikingly, each of the preconditions for financial predation is present. Although we cannot conclude from this alone that unlawful price predation occurred, the facts would certainly have warranted enforcement agency investigation. *See* Michael E. Levine, *supra* note __.

V. SIGNALING STRATEGIES: REPUTATION EFFECT

A. *Signaling Strategies*

In reputation effect and other signaling predation, the predator lowers prices in order to mislead the prey and potential entrants into believing that market conditions are unfavorable. These are plausible predatory strategies because a firm's decision to enter or to leave a market is necessarily based on its evaluation of expected future revenues and costs. Most firms contemplating entry or exit from an industry do not have all the relevant information to determine future revenues and costs. To the extent that an incumbent firm is better informed than others about cost or other market conditions, or can manipulate and distort market signals about profitability, it may be able to influence the expectations of its rivals through its pricing decisions or other actions. For example, an incumbent firm may be able to induce exit or prevent entry by setting low prices if its rivals believe that the incumbent's low prices reflect low costs.

Recent economic writers have developed several signaling theories—all based on the idea that a predator's low prices may influence the prey's and potential entrants' beliefs about future profitability and thus induce exit or deter entry.[187] These theories include reputation effect, cost signaling, test market, and signal jamming.

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[187] See Drew Fudenberg and Jean Tirole, *A 'Signal-Jamming' Theory of Predation*, 17 RAND J. ECON. 366 (1986), David Kreps, Paul Milgrom, John Roberts and Robert Wilson, *Rational Cooperation in the Finitely Repeated Prisoners' Dilemma*, 27 J. ECON. THEORY 245 (1982), David Kreps and Robert Wilson, *Reputation and Imperfect Information*, 27 J. ECON. THEORY 253 (1982), Paul Milgrom and John Roberts, *Predation, Reputation, and Entry Deterrence*, 27 J. ECON. THEORY 280 (1982), John Roberts, *Battles for Market Share: Incomplete Information, Aggressive Strategic Pricing and Competitive Dynamics, in* ADVANCES IN ECONOMIC THEORY (T. Bewley ed., 1987), Michael Riordan, *Imperfect Information and Dynamic Conjectural Variations*, 16 RAND J. ECON. 41 (1985), Garth Saloner, *Predation, Mergers, and Incomplete Information*, 18 RAND J. ECON. 165 (1987), and David Scharfstein, *A Policy to prevent Rational Test-Marketing Predation*, 15 RAND J. ECON.. 229 (1984).

In reputation effect predation the predator reduces price in one market to induce the prey and potential entrants to believe that predator will cut price in other markets or in the predatory market at a later time. The predator seeks to establish a reputation as a price cutter, based on some perceived special advantage or characteristic. Thus, a predator trying to establish a reputation for financial predation cuts price when it has superior financial resources (and when the other conditions for financial predation are present). Observing this conduct, a rival in another market or a potential entrant rationally believes that there is a greater probability that the predator will engage in financial predation in the other market, or in the same market at a later time if entry occurs. This reputation-induced belief reduces the future entrant's expected return and may deter entry. We discuss reputation effect below. In Part VI we discuss demand signaling and cost signaling.

B. *Reputation Effect Predation*

Reputation effects may be present when the predator sells in two or more markets or in successive time periods within the same market. In such situations one market or time period may serve as a demonstration market, where the predator engages in overt predatory conduct, and the other market or time period provides the recoupment market, where the predator reaps the benefits from its predatory plan. The predator establishes a reputation for aggressive conduct in the demonstration market that induces potential entrants to believe that it will price aggressively in the future when faced with new competition. This raises entry barriers, allowing the predator to increase prices in the recoupment market.

Although economic theory views reputation effect predation as a separate and distinct

predatory strategy, a reputation effect theory based on irrational toughness may be too easy to assert and too difficult to prove. Therefore, we would limit antitrust enforcement to cases where the reputation effect augments or intensifies another, more concrete predatory program. In these instances reputation predation projects the immediate anticompetitive consequences of a main predatory strategy, e.g. financial market predation or cost signaling, into other markets or other time periods. By linking reputation effect with a main predatory strategy we also illustrate that the two strategies combined are even more powerful and plausible than when considered in isolation.

1. *Economic Theory*

When a predator faces future rivals, an additional benefit of predatory conduct against a current rival may be to discourage entry. Indeed, prevention of future entry constitutes the paradigm case of reputation effect predation. By engaging in predatory pricing against current rivals the predator can acquire a reputation of being a "tough" competitor — not irrationally tough, but tough in the sense of projecting a perceived strategic advantage, for example lower costs, into other markets or time periods. Faced with the prospect of dealing with such a "tough" competitor, an existing rival and particularly a recent entrant, may be induced to exit, potential entrants may be deterred from entering, and financiers discouraged from backing either existing or future rivals.[188] The incumbent's predatory

[188] The behavioral dynamic works as follows. Potential entrants perceive a risk that an incumbent that has once engaged in predation will again lower price if further entry attempts occur. Entrants observe that the predator has already evidenced a "tough" approach to entry, and thus conclude that there is some probability that the predator will be tough in the future. If a second entry attempt occurs and predator again cuts price, potential entrants will now update and increase their probability assessment that predator is "tough" The predator knows that entrants will act in this way, which in turn increases predator's incentive to remain tough. Moreover, if the predator is not the only firm remaining in the market, its rivals have an incentive also to act "tough" even if that is not their nature, so as

reputation can then serve as an exclusionary mechanism protecting monopoly profits. We discuss reputation effect predation in the context of financial predation, but a reputation effect strategy can augment any main predatory strategy.

2. *Reputation and Financial Predation*

Reputation effects enhance the profitability of financial predation by making entry or re-entry less likely. Future potential entrants observing the failure of the current entrant, can only be more cautious in contemplating entry, whether or not they recognize the predatory nature of the price cutting. If potential entrants recognize that predatory pricing has caused the current rival's exit, fear of facing a similar fate may deter their entry. If potential entrants do *not* recognize that predatory pricing caused the current rival's exit, they may simply conclude that entry is less profitable than they previously thought.[189] Moreover, in either case future entrants will face a harder problem convincing customers to switch since customers are now more likely to believe that the new entrant will experience a similar outcome. Clearly, an entrant will find it more difficult in these circumstances to convince lenders to finance its project.

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to avoid being perceived as "soft," and willing to accommodate entry. Thus, reputation effect, which may be combined with other predatory strategies, as we propose, shows how predation can act as an entry or reentry barrier. *See* David Kreps and Robert Wilson (1982), *supra* note __ at 253; Paul Milgrom & John Roberts (1982), *supra* note _ at 303.

[189] A formal model showing how entrants are deterred from entering a new market when they see current entrants fail , even though they do not observe the predatory action, can be found in Rafael Rob, *Learning and Capacity Expansion Under Demand Uncertainty*, 58 REV. ECON. STUDIES 655 (1991). This model relies on the idea that potential entrants do not know exactly how profitable the new market is and attempt to learn general market conditions from the performance of current entrants. As Rob, Kreps et al. and Milgrom-Roberts, *supra* note—point out, it is critical that some characteristics of incumbent firms be private information for reputation effects to emerge when entrants do not observe the predatory action. Such characteristics might be an unknown cost advantage (as illustrated below), a secret marketing plan, the manager's hidden agenda, etc. The basic point is that there are a wide variety of reasons why an incumbent firm might want to meet new competition by pricing aggressively. Any of these can provide the foundation for a reputation effect.

In addition, a reduced likelihood of entry may also have anticompetitive effects on the predator's existing rivals. Far from making the current rival's position more secure, the reduced probability of entry may actually hasten the current rival's exit, and this may more than offset any gain to current rivals from increased entry barriers. This result may occur because the reduction in the number of potential entrants means there will be fewer prospective buyers for the victim's assets if it fails to meet its loan commitments. The victim's financiers may then project a lower liquidation value for their holdings, and this in turn may induce the financiers to impose more severe liquidation terms, other things being equal.[190] To break even the financiers must now raise their repayment terms to offset the fall in expected liquidation value. But higher repayment requirements then require a tougher and less flexible liquidation policy because they intensify the moral hazard risks the lender faces.[191]

Nor does the chain store paradox prevent a reputation effect strategy for financial predation (or other signaling strategy). As long as there is no well defined final period, or the precise business motive behind the incumbent's aggressive pricing is not perfectly known, the "chain store paradox logic" breaks down.[192] Under these conditions entrant cannot exclude the possibility that aggressive pricing by incumbent may be an efficient business practice, as opposed to a predatory move, and hence

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[190] *See generally* Bolton & Scharfstein (1990), *supra* note _____.

[191] That is to say, higher repayment requirements lower the entrepreneur's anticipated profit from successful operation, reducing the return to effort and inducing shirking and other moral hazard effects. *See supra* text accompanying notes ___.

In addition, and somewhat perversely, if the predatory victim decides *not* to exit, but instead tries to fight through the price war, it faces further reputational problems that may inhibit financing. Potential entrants and bystanders may interpret the victim's survival as indicating that the industry is profitable. This in turn may trigger new entry, making the market more competitive and reducing the victim's expected return. The final result may be that the victim's financiers, perceiving the victim to face increased competition, withdraw their financial support sooner.

[192] For more detailed discussion *see infra* text accompanying notes ____.

reputation effects may be present.[193]

In sum reputation effects may enhance the power of financial predation whenever the predator faces successive entry, whether in a single market or across multiple markets. In such a situation the predatory action has a demonstration effect, which increases the predator's payoff, and at the same time lowers the existing rival's payoff from attempting to ride out the price war.[194]

3. *Proof of Reputation Effect Strategy*

Proof of a reputation effect strategy would require a showing of the following essential preconditions.

(1). *The predator, a dominant multi-market firm, faces localized or product-limited competition or potential competition; or alternatively, operating within a single market, the predator faces probable successive entry over time*. Reputation effect predation always involves two markets or two time periods: a demonstration market, where the overt predatory conduct occurs, and a recoupment market (or later time period), where the reputation consequences follow. The predator exhibits its predatory character (e.g. its feigned low costs) in the demonstration market (or current time period) in order to induce the victim and potential entrants to believe that predator will cut price in another market (or later time period), thereby injuring actual or potential competition.

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[193] As Kreps & Wilson (1982), *supra* note __ at 254, have forcefully demonstrated, the prey need only believe that there is a small probability that the aggressive pricing rests on real economic advantage to establish a strong reputation effect that increases future barriers to entry.

[194] In a separate discussion paper we show how a reputational effect can also enhance the power of a price signaling strategy. *See* Patrick Bolton, Joseph F. Brodley & Michael H. Riordan, Predatory Pricing: Strategic Theory and Legal Policy, Princeton University Discussion Paper (1999).

(2). *The alleged reputation effect reinforces an identified predatory strategy pursued by the predator, such as financial market predation, cost signaling, or test market predation*. Reputation predation never stands alone in our proposal. Instead it serves as an augmenting or aggravating factor which intensifies a main predatory strategy. We thus avoid the more controversial use of the reputation effect theory, which would allow a predator to establish a predatory reputation based on projecting a slightly irrational "toughness." In our usage reputation effect predation always involves a projection of the immediate anticompetitive consequences of financial market predation or other predatory strategy from the demonstration market into other markets or time periods.

(3). *The predator deliberately pursues a reputation effect strategy*. To prevent the legal rule from being over inclusive it is also necessary to show that the predator knowingly adopted a reputation effect strategy. Evidence tending to prove knowing adoption includes: (1) proof of a corporate plan to engage in reputation predation, (2) publicizing or disseminating information likely to induce a reputation effect, such as information showing failure of new entry in a particular sub-market due to price cutting by the predator, (3) suppression of information that might reveal bluffing by the predator, for example the payment of large amounts to settle a predatory pricing suit (particularly if the settlement amount is secret), or to acquire a complaining victim in the demonstration market, and, perhaps most importantly, (4) repetition of the predatory action in multiple markets or over successive time periods, which strengthens the competition-reducing belief the predator seeks to induce.

(4). *The potential entrant victim observes the exit or other adverse effect experienced by the predator's existing rival in the demonstration market; and such knowledge is to be presumed*

if it is commonly known in the industry. Finally, the potential entrant victim must observe the adverse effects of the predatory conduct in the demonstration market if its future competition is to be inhibited. Note that the potential entrant need not be aware that a predatory strategy has caused these effects. It is sufficient if the potential entrant simply knows that the predator's existing rival has been forced from the market or has suffered other serious economic harm. Exclusion or other economic injury to the predator's existing rival is bad news for the potential entrant, even when the cause is not known, since it likely indicates low market profitability.[195] Knowledge that the predator's existing rival has left the market or sustained serious injury can be presumed if it is commonly known in the industry.

4. *Illustration: Entry into Local Telephone Market*

Two recent case studies,[196] involving entry into local telephone markets during the formative period of the Bell Telephone system, illustrate the strategic approach to reputation predation. While these examples occurred some time ago, they have modern implications because they involved a network industry in which failure of initial competition led to long enduring monopoly (later sustained by regulation). We focus on the efforts of an independent telephone company to enter the local market in Madison, Wisconsin in competition with the established Bell System company.[197]

(i) ***Factual Summary***

Wisconsin Telephone [hereafter "Bell"] entered the Madison market in 1879. Sixteen years later, after the Bell patents had expired, an independent telephone company, Dane County Telephone

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[195] *See supra* text accompanying notes ___.

[196] David Gabel & David I. Rosenbaum, *Prices, Costs, Externalities and Entrepreneurial Capital: Lessons from Wisconsin*, 40 ANTITRUST BULL. 581 (Fall, 1995) [hereafter *Gabel & Rosenbaum*]; David F. Weiman & Richard C. Levin, *Preying for Monopoly? The Case of Southern Bell Telephone Co.*, 102 J. POL. ECON. 103 (1994).

[197] *See Gabel & Rosenbaum, supra* note __ at 587.

(the "entrant") sought to enter. The market appeared attractive for entry because Bell had obtained only 236 customers, and these customers appeared far from satisfied. Customers had complained of high prices and poor service, but Bell was unresponsive. Founded by local citizens and politically well connected with organizers, who included Robert LaFollette, later Governor, Senator and a Presidential candidate, entrant offered service at only one-half the price previously charged by Bell. After only seven months entrant had signed up 400 customers on three-year contracts, 140 more than Bell had recruited in 15 years. Entrant was well managed, offered good service and from the beginning attempted to integrate the local telephone service into state and regional markets, and eventually the national market.[198]

Bell responded by cutting price drastically. Indeed, three months before entrant began service Bell reduced price by 25 percent. In the three months following entry Bell reduced its rates to one-quarter of their original level and offered free service to the city government, railroads, many other businesses, and indeed to any existing Bell customer who would agree not to remove its Bell telephone.[199]

Despite these inducements, entrant continued to thrive. After three years entrant had 850 customers to Bell's 240. After ten years entrant provided service to 2500 Madison subscribers, while Bell served only 900. Expanding into the 30 mile radius around Madison, entrant served 3500 additional subscribers to Bell's 250. Thus entrant now served 7000 customers in the greater Madison region to Bell's 1150, increasing its relative market share. But entrant's success was not assured. It realized its future depended on construction of a full toll network connecting with regional and national

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[198] *See id.* at 590.
[199] *See id.* at 591.

markets. Lack of capital constrained these plans. Entrant had consumed its existing liquid capital in upgrading and expanding its local network and had difficulty in raising additional funds.[200]

Entrant's financial problems were substantially caused by Bell's low pricing policies and other efforts to block entrant's financing.[201] Bell maintained its low rates in Madison (and other competitive markets) at levels almost surely below its long run average incremental cost,[202] which is the correct measure of avoidable costs for dynamically expanding high sunk cost industries, such as telephone markets, where short run marginal costs may be close to zero.[203] Stymied in its efforts to raise additional funds, entrant was able to pay a dividend of only about one percent a year. After 13 years of operations, entrant sold out to Bell at a price that was substantially below its shareholders' investment cost.[204] The buyout of local competitors on terms that would discourage further entry was a practice followed elsewhere by the Bell System.[205]

The problems the entrant faced in Madison confronted other independent telephone companies. Bell followed similar pricing practices in other sections of the country, including Ohio, Illinois, Upstate New York and the Southern United States. Such practices tended to deprive entrants in local telephone markets of the cash flow needed to finance expansion.[206] Thus, when another independent

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[200] *See id.* at 594.

[201] For example, Bell pursued a public relations campaign to undermine the financial viability of independent telephone companies. David Joshua Gabel, The Evolution of a Market: The Emergence of Regulation in the Telephone Industry of Wisconsin, 1893-1917, Ph.D. dissertation (University of Wisconsin, 1987) [hereafter *Gabel Ph.D. Dissertation*], pp. 157, 169.

[202] *See Gabel Ph.D. Dissertation* , *supra* note __, at 153-154, Weiman & Levin, *supra* note __, at 112. These authors state that price was below the local Bell company's average operating costs, including equipment rental charges from the parent, American Bell (*see Gabel Ph.D. Dissertation*, *supra* note _ 149-150).

[203] *See* MCI Comm. Corp. v. AT&T, 708 F.2d 1081 (7th Cir. 1981), *cert. denied*, 464 U.S. 891 (1983); 3 AREEDA AND HOVENKAMP, ANTITRUST LAW ¶741e2.

[204] Entrant sold its assets to Bell, shortly after telephone industry in Wisconsin was brought under state public utility regulation in 1907. Bell has lobbied hard for state regulation to gain protection from competition.

[205] See Weiman & Levin, *supra* note ___, at 119.

[206] *See Gabel & Rosenbaum*, *supra* note ____, at 606; Weiman & Levin, *supra* note ___, at 116.

telephone company obtained a franchise and sought to construct a rival telephone network in Milwaukee, the organizers found they were unable to raise the needed capital.[207]

(ii) ***Proof of Case***

Reputation effect predation potentially provides a supplemental basis for establishing a predatory scheme and probable recoupment. Therefore, we confine our discussion to proof of these elements.[208]

(A) SCHEME OF PREDATION AND SUPPORTING EVIDENCE

The evidence showed that each of the preconditions for reputation effect predation was present.

(1). *The predator, a dominant multi-market firm, faces localized or product-limited competition or potential competition; or alternatively, operating within a single market, the predator faces successive entry over time*.

The predator, Wisconsin Bell, was the dominant multi-market firm in Wisconsin. No other company had Bell's widespread network and presence in multiple Wisconsin markets. Bell held a monopoly in Wisconsin's major city, Milwaukee, as it did in most major U.S. cities. At the same time

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[207] *See Gabel Ph.D. Dissertation*, *supra* note _ at 247-54. Bell also took other steps to discourage financing of the Milwaukee group, including contacting J.P. Morgan, the Bell System investment banker, to deny the group access to Eastern financial markets. *Id*.

[208] Most of the other elements of proof appear to be readily satisfied, and in any event pose no unique problems not previously discussed. The market structure facilitated predation. Bell held a monopoly in the relevant Madison market. There were entry and reentry barriers, evidenced by high sunk costs and the absence of new entry after Bell had acquired its only existing rival, which itself never attempted to reenter the market. This might of course be explained in Madison by the fact that Bell maintained its low price for several years. But relevant to the reputation effect, entry did not occur in other markets, such as Milwaukee, where price had *not* been reduced. As for the remaining elements, price was clearly below at least some measure of incremental cost in a dynamically expanding industry where AVC would have been a singularly poor cost standard, and the economic case studies suggest no business justification for the below cost pricing.

the Bell system faced localized competition in many of its Wisconsin markets, centered in small to moderate sized communities. At one point Bell faced actual competition in 50 percent of its local Wisconsin markets and potential competition in many more. In these communities, as in Madison, Bell had held a monopoly of telephone service prior to independent entry. While there was some coordination of entry by independent telephone companies into individual cities, entry did not occur simultaneously, but over time, dependent on the action of local groups.

(2). *The alleged reputation effect reinforces an identified predatory strategy pursued by the predator, such as financial market predation, cost signaling, or test market predation*.

Bell's price cutting practices appeared to reflect a strategy of financial market predation, reinforced by a reputation effect. Entrant was cash constrained and dependent on outside financing for expansion. Bell's price cutting tactics threatened entrant's viability since future success depended on expanding its network connections beyond the local area. Bell was surely aware of this financial need, since it faced large capital requirements itself in expanding its network. Clearly Bell could finance predation internally, continuing to pay a healthy dividend throughout the predatory period.[209]

(3). *The predator deliberately pursues a reputation effect strategy*.

Several factors support the conclusion that Bell deliberately pursued a reputation effect strategy. First, Bell held its Madison rates below cost for 13 years[210] — conduct which appears inexplicable in absence of an anticipated reputation effect. Second, Bell followed a conscious strategy of buying out independents only at low prices that would discourage new entry.[211] Third, Bell pursued

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[209] *See Gabel & Rosenbaum, supra* note ____, at 604.
[210] *See Gabel Ph.D. Dissertation, supra* note __ at 153-54.
[211] *See Gabel & Rosenbaum, supra* note __, at 607.

other exclusionary tactics that would have enhanced its predatory reputation, including a public relations campaign that implied that the independents were not financially solvent, made wasteful investments and were overcapitalized; denial of interconnection with the Bell system even to non-competitive independent companies; attempts to influence local regulatory policies to weaken rivals; and at least in other sections of the country, expansion ahead of demand.[212] Thus, it appears that Bell sought to discourage independents from new entry and expansion by establishing a reputation for price cutting and other predatory and exclusionary actions.

(4). *The potential entrant victim observes the exit or other adverse effect experienced by the predator's existing rival in the demonstration market; and such knowledge is to be presumed if it is commonly known in the industry.*

Managers of local telephone companies actively exchanged information. Indeed, entrant's president took the lead in attempting to establish a regional and national network of independent telephone companies. He was in frequent contact with officers of other independent companies in Wisconsin and throughout the Midwest, exchanging information on the relation between the independents and Bell. Moreover, the rate wars and bitter contests between the independents and Bell were widely reported in the press. Thus, the adverse effects of the price cutting on Bell's existing rivals were widely known within the telephone industry, and the independent rivals easily perceived that Bell's low pricing policy was a principal cause of their plight.[213]

(B) PROBABLE RECOUPMENT

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[212] *See Gabel Ph.D. Dissertation*, *supra* note _ at 154-55, 157-169.
[213] *See id.* at 153-96.

Proof of recoupment requires ex post evidence that the alleged predatory pricing (1) excludes or disciplines rivals or potential rivals, and (2) thereby injures competition and consumers by enabling the predator to raise prices or lower quality, or dangerously threatens to do so. As we have seen, the two effects are related in that the exclusion or disciplining of rivals is the instrumentality by which competition and consumers are harmed.

Exclusionary Effect on Rivals. Bell's below cost pricing excluded its existing rival in Madison and excluded or was capable of excluding future rivals, both in Madison and in other Wisconsin communities. In Madison, sustained below cost pricing, extending over 13 years, prevented Bell's existing rival from raising the necessary capital to expand service and construct a toll network. As a result the rival ultimately sold out to Bell on unfavorable terms, receiving only a fraction of its original investment.[214] The rival's financing difficulties were substantially caused by the low pricing, which drastically reduced the rival's return, allowing only a one percent annual dividend, and blocking additional financing. To be sure, other factors impeded the Madison rival, such as the refusal of the Bell system to interconnect, but almost surely the below cost pricing was a significant and material cause of the Madison rival's exit.

The exclusion of the Madison independent was an intended mechanism to carry out Bell's reputation effect strategy. The Madison independent was a prime predatory target because its president was a leader among independents, not only in Wisconsin but throughout the Midwest and because Madison was the state capital where legislators could observe the benefits of competition first hand. The sustained below cost pricing served as a "dire warning" to potential entrants in other

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[214] *See Gabel & Rosenbaum, supra* note __, at 602.

cities.[215] A later attempt by an independent group to enter Milwaukee failed for inability to obtain financing; and similar effects occurred in other markets.[216] Thus, Bell's intended predatory strategy both excluded its existing rival in Madison and excluded or was capable of excluding potential rivals in Madison and elsewhere.

While the low pricing in Madison was a substantial cause of such reputation effect exclusion, there were other causes as well. These included pressures by Bell on banks and investment bankers to block financing of independents,[217] Bell's purchase of telephone equipment manufacturers who supplied independents, and poor accounting practices by the independents themselves. However, whatever the impact of the other effects, economic studies generally agree that the predatory pricing was a significant cause of the widespread exclusion of the independent telephone companies from Bell's markets.[218]

Injury to Competition and Consumers. Reputation effect predation injures competition and consumers because it raises entry barriers into the recoupment markets and thereby enables higher prices or reduced quality sufficient to enable probable recoupment, or created market conditions that made such effects probable. A striking feature of reputation effect predation is that recoupment occurs, not in the predatory market, at least not right away, but primarily in other markets or in the predatory market at a later time. The Wisconsin Telephone case provides a vivid example. Bell maintained its

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[215] *Gabel Ph.D. Dissertation*, *supra* note at 153-54.

[216] *See Gabel & Rosenbaum*, *supra* note _, at 604.

[217] For example, to impede the financing of entry in Milwaukee Bell induced J.P. Morgan to use its influence to obstruct financing. See *Gabel Ph.D. Dissertation*, *supra* note __, at 248.

[218] *See* David Gabel, *Competition in a Network Industry: The Telephone Industry*, 54 J. ECON. HISTORY 543, 567 (independents in Midwest vanquished by strategic moves "not least of which was predatory pricing"): Kenneth Lipartito, *System Building at the Margin: The Problem of Public Choice in the Telephone Industry*, 49 J. ECON. HISTORY 323 (1989) (AT&T's monopoly stemmed from managerial strategy, compromise with rivals and ability to influence state regulators, not natural monopoly).

low prices in Madison for 13 years before acquiring the entrant's assets, possibly delaying recoupment to the point where it was doubtful that predation could be profitable in Madison itself.[219] Moreover, the advent of state public utility regulation probably limited Bell's ability to raise prices subsequently.[220] Nevertheless, viewed through the lens of a highly plausible theory of reputation effect predation, the evidence strongly points to additional recoupment in other markets, stemming from reputation effects.

The dominating fact is that following the below-cost pricing by Bell in Madison and in other markets, Bell was able to raise prices to a supracompetitive level without inducing significant entry. Evidence that Bell's prices increased to supracompetitive levels appears from the facts that Bell's returns in competitive markets were only a fraction of its returns in monopoly markets. and far exceeded its cost of capital. After the collapse of the independent telephone movement, over the period 1913 to 1935, Bell's cost of capital was between five and six percent, while its average return was 11 percent. In the monopoly markets of Milwaukee, New York and Chicago Bell's returns were, respectively, 10 percent, 14.6 percent and 16 percent.[221] These large discrepancies strongly suggest a monopoly return, especially since following the demise of the independents, the growth rate for new telephones fell from 20.6 percent during the price wars to 5.5 percent, comparable to the growth rate before the independents attempted entry.[222] Further evidence that Bell could maintain substantially

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[219] Bell management estimated losses of between $10,000 and $15,000 per year. The discount at which Bell finally acquire the prey's assets amounted to $62,000, probably not sufficient to overcome these long years of losses. *See Gabel & Rosenbaum, supra* note ___, at 602-03; *Gabel Ph.D. Dissertation, supra* note _ at 154 n.2.

[220] Bell actively sought regulation after passage of the state anti discrimination law for telephone service (*see Gabel & Rosenbaum, supra* note ___ , at 601), perhaps suggesting that Bell's expected return under regulation exceeded its anticipated return under the competition that might be induced if it could not discriminate in local markets.

[221] *See* David Gabel, *Competition in a Network Industry*, *supra* note _, at 567.

[222] *Id.* at 567-68 (1994); *Gabel & Rosenbaum, supra* note __ at 604-05. The survival of the lower cost independents would surely have reduced Bell's profits significantly.

higher prices in its monopoly markets appears from the independents' vigorous lobbying effort in Wisconsin to obtain legislation to limit price discrimination by telephone companies, which Bell vigorously opposed.[223]

Despite the high prices Bell charged in its monopoly markets, there was no waive of new entry into such markets. On the contrary the high growth rate for new telephones during the competitive period when the independents challenged Bell fell back to levels that prevailed before the rise of the independents.[224] Bell regained control of the industry as the independents either sold out to Bell or accepted sublicensing agreements they had previously rejected.[225] While Bell's ability to maintain high prices without attracting new entry rested on more than one factor, predatory pricing was, as we have seen, an important contributing cause.

Thus, the below-cost pricing in Madison and elsewhere established a prima facie case of probable recoupment because (1) the alleged scheme of predation was based on a highly plausible reputation effect strategy and the factual preconditions for such a strategy were present, (2) the predatory scheme excluded or was capable of excluding rivals or potential rivals, and (3) the likely effect was to induce a reputation effect that raised entry and reentry barriers in other local markets, enabling Bell to maintain its monopoly and charge high prices, and thereby injured competition and consumers.[226]

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[223] *See Gabel & Rosenbaum, supra* note___, at 597.

[224] *See* David Gabel, *Competition in a Network Industry*, *supra*, at 567.

[225] *See id.*, *supra*, at 568.

[226] It is occasionally argued that network or other efficiencies in telephone service make monopoly service more efficient. *See* Markus Mobius, Death through Success: The Rise and Fall of Independent Telephony at the Turn of the Century (MIT working paper, Feb. 17, 1999) (*but see* Kenneth Lipartito, *supra* note ___). If so, Bell might have had an efficiencies defense based on lower costs. An alternative output expanding efficiencies explanation might be that under the regime of competition existing in Madison, it is possible that Bell achieved efficiencies warranted by a more extensive infrastructure such that the low pricing in early years was output expanding and in later years not

VI. COST SIGNALING, DEMAND SIGNALING AND OTHER STRATEGIES

Other signaling strategies likely to involve predatory pricing include cost signaling and demand signaling designed to induce the prey to mistakenly believe that demand is low in a market the prey seeks to enter. We begin with demand signaling.

A. *Demand Signaling: Test-Market and Signal-Jamming*

1. *Economic Theory*

In demand signaling a better informed predator reduces price to convince the prey that market conditions are unfavorable and that aggregate demand is too low to justify either the continued presence of both firms in the market or a major expansion drive by the prey. The prey, falsely inferring a weak level of demand from the predator's low price, may be deterred from expanding or even induced to leave the market. While demand signaling as a general phenomenon appears less plausible than other predatory strategies, such as financial predation and reputation effect, test market and signal jamming predation stand on a stronger basis. Demand signaling generally is implausible because it is unlikely that one firm can have superior information about aggregate demand, or that, even if that were so, a less informed firm could not retrieve this information from price and market share information.

We therefore confine our discussion to test market and signal jamming predation—the situations where the predator is especially likely to have an information advantage. Here a predatory signaling strategy becomes quite plausible. The victim, lacking knowledge and experience in the market, seeks

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below cost. Under either of these alternatives, if established by the facts, and if no less restrictive means existed to achieve such efficiencies, Bell would have had an efficiencies defense. This might prevent a finding of unlawful recoupment in Madison, as well as in other markets since recoupment would rest on lower costs achieved through rapid expansion.

to introduce a new product or brand to compete with an existing product. Rather than enter all available markets, the victim may probe market response by entering a limited "test market." The established firm (the predator) may attempt to frustrate this market test by either of two predatory strategies.

In test market predation the predator secretly cuts price to reduce the entrant's sales in the test market, and thereby induce the entrant to believe that demand is too low to justify market entry. The entrant, incorrectly believing that demand for its product is low, or unable to determine how strong the demand is, abandons further entry attempts, or enters the market on a smaller scale. By contrast, in signal jamming the predator openly cuts price in order to distort the test market results. As a result the entrant cannot ascertain market demand under normal conditions, but instead is able to observe demand for its product only under the exceptional circumstance of an ongoing price war. Thus, the entrant's market test is foiled, and the entrant is unable to determine whether market demand for its product is sufficient to support entry.[227]

To analyze these strategies systematically, economic theory focuses on the following simplified story. An entrant is trying to decide whether to launch a new product to compete with an established brand. The entrant does not know whether demand is high or low. If demand for the entrant's new product is high, entry is feasible. However, if demand is low, entrant will lose money. To enter the market at full scale is expensive. Thus, if entrant must make its decision without additional information, it would stay out of the market because possible losses are too high to justify the gamble of new entry

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[227] *See generally*, Steven C. Salop & Carl C. Shapiro, A Guide to Test Market Predation, 1980 (Mimeo); J. Roberts, *A Signaling Model of Predatory Pricing*, 38 OXFORD ECON. PAPERS 75 (Supp. 1986); Janusz A. Ordover & Garth Saloner, *Predation, Monopolization & Antitrust*, *supra* note ____, at 558-59.

over the whole market. However, by test marketing its new product on a limited basis, entrant can gain sufficient information about future sales to determine whether entry will be profitable. The potential gain from successful entry fully justifies the cost of the market test. A simple illustration illuminates the entrant's dilemma.

Let us suppose the entrant believes that the probability of high demand is only .3, while the probability that demand is low is .7. If demand is high, the present value of the entrant's expected operating profit is $50,000, while if it is low it is only $10,000. The costs of the new production facility are $30,000, all of which costs are sunk. Thus, in the absence of any information about demand, the entrant's expected return from entry, factoring in these probabilities and payoffs is $22,000,[228] which is less than the cost of entry $30,000. Thus, based on this information entry does not appear attractive.

The entrant may attempt to obtain more information about demand by test-marketing the new product at a cost of only $5,000. If the entrant could determine that demand is strong, it would enter the market so long as its expected profit exceeds the cost of test marketing. If the incumbent responds passively to the test-market campaign, the entrant will be able to ascertain demand for its product and will enter when demand is high. However, new entry will not please the incumbent since following entry, it earns only duopoly profits, which are less than its previous monopoly profit. By pursuing a strategy of either test market or signal jamming predation, the incumbent can block or impede entry either by misleading the entrant into believing that demand is low or distorting the data that the entrant receives from its test market experiment so that entrant cannot determine whether demand is high or low.

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[228] In numbers: 0.7 x $10,000 + 0.3 x $50,000 = $22,000.

Suppose for example that the entrant's product is of higher quality than the incumbent's product such that customers would be willing to pay more for the superior product. If incumbent can secretly cut price below its cost, a significant fraction of customers who would have bought the new product will now stay with the old. The entrant, unable to see the discounts, would then be led to believe that demand is low and decides not to enter.

Even if the entrant observes the price cut, the incumbent may be able to garble the information the entrant receives from the test market, and by that means block entry. Entrant seeks to determine whether customers will pay more for its high quality product. As before, incumbent cuts price below cost, but does so openly. As a result, customers prefer the incumbent's old product. Even if the entrant knows the incumbent's price is below cost and not sustainable on a market-wide basis, entrant is nevertheless unable to judge what fraction of customers would purchase its higher quality new product under normal market conditions. Entrant's test market experiment would then be frustrated and entrant may decide not to enter the market.

2. *Proof of Test Market Strategy*

(1). *The predator observes that the victim is attempting to enter a limited product or geographic market with a new product or brand*. The first element is rather obvious. The victim must be attempting to test the market response to its product on a limited basis and the predator must know that this is occurring.

(2). *The predator secretly offers below cost prices on its own competing product or brand, either following or in anticipation of the victim's entry*. In test market predation the price cutting must be secret, for otherwise the victim will not be misled into thinking that market demand is

low. The secret price cuts include those made in anticipation of entry, as well as following entry. Price cuts made before entry must be included in order to prevent easy evasion of the rule.

(3). *The predator's secret price cutting in the test market differs from its pricing conduct in other markets where it faces competition on a sustained basis*. The significance of the predator's secret price cutting in the test market is illuminated by a comparison with the predator's pricing conduct in other markets.[229] It is highly indicative of test market predation if predator engages in secret price cutting only in the test market. On the other hand, if the predator's generally engages in secret discounting in other markets, the victim should not be misled in any anticompetitive way. However, when the test market alone is subject to secret discounting, the victim may have difficulty in probing market demand precisely, and may therefore decline to enter the market.

(4). *The victim could rationally believe that demand for its product may be weak in the test market*. Test market predation will not injure competition unless the victim is misled into believing that demand for its product is weak. The victim's own testimony is not credible since it would have an inducement to misrepresent. Moreover, such evidence may involve subjective or reflective testimony by managers about what they or their predecessors perceived at a past time—a particularly unreliable form of evidence.[230] But even past documents from the victim's files may be biased with a view to future litigation. Instead, we would test the victim's belief by the rational firm standard: whether the secret price cutting would mislead a representative firm in the industry. Thus, the price cuts must not

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[229] The recent DOT Guidelines on predatory pricing follow this approach in comparing the predator's capacity expansion in the predatory market with its conduct in other markets. *See* DOT Proposal *supra* note at ¶ 49, 227.

[230] *See* David Genesove and Wallace P. Mullin, Validating the Conjectural Variation Method: The Sugar Industry 1890-1914 (NBER Working Paper 5314, Oct. 1995) (unreliability of reflective evidence of corporate knowledge or purpose, as compared with internally credible evidence of corporate plans and conduct).

have been disclosed publicly; the incumbent must have some "price leadership" role in the industry; and the victim could rationally think that incumbent has an informational advantage in assessing demand conditions.

3. *Proof of Signal Jamming Predation*

(1). *The predator observes that the victim is attempting to enter a limited product or geographic market with a new product or brand*. This element is the same as in test market predation.

(2). *The predator offers below cost prices on its own competing product or brand, either following or in anticipation of the victim's entry*. In contrast to test market predation, in signal jamming it is unnecessary to prove secrecy since the object is simply to obfuscate the test market results by severe price cutting.

(3). *The predator's price cutting in the test market differs from its pricing conduct in other markets where it faces competition on a sustained basis*. This element is similar to the third element in test market predation, and the analysis there applies here. If the predator normally engages in similar price cutting in markets where it faces competition, the entrant can effectively gauge market response to its product since it faces normal competitive conditions in the test market. Thus, there is thus no signal jamming effect.

(4). *The victim could rationally believe that the price cutting prevents it from effectively ascertaining demand for its product in the test market*. This element is similar to the fourth element under test market predation except that instead of being mislead into believing that demand is weak, the victim is unable to assess the demand for its product due to the signal jamming effect. The victim's

disability should, as in the test market case, be measured by whether a representative firm in the industry would be able to assess demand under the conditions caused by the predator's below-cost pricing?

4. *Illustration: Entry into Eastern Coffee Market*

In the 1970's General Foods, the dominant seller of coffee in the eastern United States, sought to defeat or delay entry of a rival brand by severe price cutting in selected markets.

While the Federal Trade Commission in a 1984 decision,[231] (made before publication of the first economic paper on signal-jamming) ultimately found the low pricing to be lawful, the facts nevertheless provide a useful scenario to illustrate application of our proposed approach to signal jamming predation.

(i) ***Factual Summary***

General Foods, through its well known Maxwell House brand, dominated the eastern coffee markets with a market share of 43 percent in the East as a whole, and market shares in various eastern metropolitan areas of up to 60 percent. In 1971 Procter & Gamble ("P&G"), which had not previously sold coffee in the East, sought to test market its Folger brand through entry into a few, carefully selected eastern metropolitan areas. General Foods responded by cutting the price of Maxwell House below average variable cost in each of the test markets Procter & Gamble was attempting to enter. The price cutting was intense. Maxwell House was sold below average variable cost for a year or longer in various markets, and at times below the cost of the unprocessed green coffee beans.[232]

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[231] *See* In re General Foods, 103 F.T.C. 204 (1984).

[232] *See* In re General Foods, 103 F.T.C. 204, at ¶423 (1984); *see also*, Hilke & Nelson, *Strategic Behavior and Attempted Monopolization: The Coffee (General Foods) Case*, *in* THE ANTITRUST REVOLUTION 208, 222 (Kwoka &

Procter & Gamble had a practice of carefully test marketing brands before undertaking large scale entry. Following the drastic price reductions on Maxwell House coffee, P&G made no attempt to enter other eastern markets for several years. However, the FTC majority dismissed the case on a finding that General Foods lacked market power. The Commission held that General Foods did not have market power because the relevant market was *not* as FTC Complaint Counsel argued—particular metropolitan areas—but the entire nation where General Foods held only a 24 percent market share. In addition, the Commission found that high excess capacity existed in coffee production; entry barriers were low; and accordingly General Foods had no ability to exclude competitors or raise consumer prices.

(2) ***Proof of Case***

(A) FACILITATING MARKET STRUCTURE

As stated, the FTC found absence of a monopolistic or facilitating market structure. The negative finding on market structure was not inevitable. In fact it was highly arguable that the relevant markets were the local metropolitan areas, which P&G was attempting to enter. General Foods set different prices in different metropolitan markets depending on the strength of competition, and Maxwell House coffee commanded a premium price at the wholesale level, catapulting General Foods's coffee profits into the top 5 percent of profitable firms.[233] However, our purpose is not to dispute the FTC's findings on market definition and market power, but to illustrate application of our approach to signal

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White ed. 1989) (hereinafter Hilke & Nelson, *Strategic Behavior*). The price also appeared to be below average avoidable cost since the cost of the unprocessed bean would appear clearly to be an avoidable cost.

[233] The high wholesale price reflected the "featuring advantage" that Maxwell House coffee commanded as the largest selling brand. *See* Hilke & Nelson, *Strategic Behavior*, *supra* note __, at 215, n.25; *see also* In re General Foods, 103 F.T.C. 204, ¶¶ 13-19.

jamming predation. Thus, we will assume for purposes of discussion that General Foods had market power in eastern metropolitan markets.

(B) SCHEME OF PREDATION AND SUPPORTING EVIDENCE

(1) *The predator observes that the victim is attempting to enter a limited product or geographic market with a new product or brand*. This element is easily satisfied. The alleged predation is General Food's response to the test market entry of Folger into four eastern metropolitan markets. General Foods reduced the price of Maxwell House in direct response to Folger's entry into particular markets, but did not reduce prices in other markets. This of course did not occur by accident, but was based on General Food's observed entry of Folger into the test markets. Indeed, General Foods's price reduction was a deliberately chosen corporate strategy.[234]

(2) *The predator offers below cost prices or discounts on its own competing product or brand, either following or in anticipation of the victim's entry*. Following P&G's entry into the Cleveland, Pittsburgh and Syracuse markets, General Foods priced Maxwell House below its average variable cost (and presumably short run incremental cost) over a sustained period. In Syracuse price was held at this low level for seven out of nine successive quarters.[235] Thus, this element is also easily satisfied.

(3) *The predator's price cutting in the test market differs from its pricing conduct in other markets where it faces competition on a sustained basis*. General Foods faced long-standing competition in all of its eastern markets since its largest market share in any metropolitan area was 60

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[234] *See* In re General Foods, 103 F.T.C. at 240-42 ¶ 155-70.

[235] *See id.* at 340-41.

percent. Yet it only reduced prices in markets that Folger sought to enter.[236] Moreover, it was only within the Syracuse test market that General Foods introduced a "fighting brand" ("Horizon"), which had, according to the Administrative Law Judge "the sole function to blunt Folger's Syracuse entry by imitating its packaging."[237] Folger of course presented a serious challenge to Maxwell House since Folger was the most popular coffee brand in the West and was backed by a strong company. But that only cements the proof of this element, showing that the price reduction, targeted against the new entrant, differed from its pricing conduct in other competitive markets.

(4) *The victim could rationally believe that the price cutting prevents it from effectively ascertaining demand for its product in the test market*. General Foods drastic price reductions on Maxwell House appear to have clouded test results and delayed entry, according to the FTC's economic witnesses.[238] P&G was known to be a careful marketer that followed the practice of requiring its test markets to stabilize and show satisfactory returns before it would expand sales—certainly a rational business approach.[239] General Foods priced Maxwell House below cost for sustained periods, thereby distorting test market results. Moreover, the introduction by General Foods of a new brand (Horizon) further disrupted test market sales.[240] Thus, it appears that P&G could rationally have concluded that the below-cost pricing prevented it from ascertaining market demand in its test markets.

The other elements necessary to sustain a violation, exclusion of rivals, probable recoupment,

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[236] *See* Hilke & Nelson, *Strategic Behavior*, *supra* note ____, at 224.

[237] In re General Foods, 103 FTC at 297 ¶ 438.

[238] *See* Hilke & Nelson, *Caveat Innovator*, 8(2) J. ECON. BEHAVIOR & ORG. 213, 221 (1987) (the article was written after the decision).

[239] *Id*.

[240] *Id*. at 225 n.59.

price below cost and the efficiencies defense, require little discussion in view of the record. The FTC never reached these issues since it disposed of the case on a failure to prove market power. However, assuming the presence of market power, Complaint Counsel presented evidence that would have supported findings on these remaining elements. The below-cost pricing has its intended exclusionary effect on rivals. The FTC economic witnesses in their post-predation article claimed that P&G delayed further entry into the East in part because of these "test-market distortion effects,"[241] which led P&G to conclude that further market tests were needed.[242] In fact, P&G delayed wider entry, beyond its initial test markets for several years so that it took a full eight years from P&G's first test market entry to complete its planned expansion into the East.[243] Indeed, internal business documents showed that delaying the entry of the Folger brand was General Foods's explicit goal.[244]

Probable recoupment was supported by evidence that after the price cutting in the Cleveland and Pittsburgh test markets, General Foods was able to restore higher prices with only modest loss of market share.[245] The resulting deferral of P&G's entry in the East for several years should easily have enabled General Foods to fully recoup its predatory investments in the limited test markets, injuring consumers by increased prices in the broader Eastern markets and denial of a new brand. Below-cost pricing was established by proof that General Foods maintained price below its average variable cost for long periods. Thus, the burden of proof shifted to the defendant to establish an efficiencies justification.

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241 *Id*. at 224.
242 *Id*. at 217.
243 *Id.*
244 *See In re General Foods*, 103 F.T.C. at 250 ¶¶ 209-210.
245 *See* Hilke & Nelson, Strategic *Behavior*, *supra* note __ at 224.

The alleged predator offered an efficiencies defense, asserting that it had reduced price to meet competition from the Folger brand. But since the predator cut price below its own average variable cost, the meeting competition argument would provide no defense under our proposed rule.

B. *Cost Signaling*

1. *Economic Theory*

In cost signaling a predator drastically reduces price to mislead the prey to believe that the predator has lower costs and to exit the market. More specifically, a predator trying to establish a reputation for low cost cuts price below the short run profit-maximizing level. Observing the predator's low price, the prey rationally believes that there is at least some probability that the predator has reduced costs. This lowers the prey's expected return and causes the prey to exit. Cost signaling predation is best explained by an illustration.

Consider an industry that has only two firms. Both firms have the same costs initially, but one firm (Firm 1) may be able to reduce its production costs through an important technical innovation, management change, exclusive access to a cheap input, or similar means. If any of these events occur, Firm 1 will be able to charge much lower prices. Suppose further that the cost reduction will be so great that even if Firm 1 acts as a monopolist and raises its prices to the full monopoly level, the second firm cannot compete, and must leave the market.

A predatory problem potentially arises when Firm 1, having failed to achieve a cost breakthrough, misleads the second firm into believing that it has succeeded in reducing its costs. To convince its rival, Firm 1 reduces its price to what it would have charged had it actually made the cost breakthrough. The potential victim suspects that Firm 1 may be bluffing, but it can't be sure. Indeed, if

it knew for certain that Firm 1 was bluffing, it would remain in the market, and if it knew for sure that Firm 1 had achieved the cost breakthrough, it would quit the market because further competition would be fruitless. But the victim lacks certain knowledge. Instead the intended victim must make a probability assessment, based on available information to determine whether its expected return from staying in the market exceeds its expected return from leaving (and investing its capital elsewhere).

A strategic analysis of cost signaling shows that under a range of plausible conditions, the victim will leave the market even though it strongly suspects the predator is bluffing. Pursuing our illustration, suppose that if Firm 1 had made a cost breakthrough it would have been able to reduce its previous market price from say $60 to $40, causing its rival to exit. In fact, Firm 1 has achieved no cost breakthrough, but still lowers its price to $40 in an effort to mislead its rival and induce it to leave the market. The rival, unable to observe Firm 1's costs, sees only that Firm 1 has reduced its price below the rival's cost.

The victim, observing Firm 1's price reduction from $60 to $40, can only guess whether this rests on a cost breakthrough. In forming its estimate the victim will rationally use all available information. One important piece of information is Firm 1's price. If the price is low, the victim may reasonably assume that there is some increased likelihood that Firm 1 has been able to reduce its costs. The victim will add this to other information, for example, the fact that Firm 1 has recently hired a new management team, in order to make an overall assessment.

To see why this predatory strategy may succeed, even though the victim is skeptical about Firm 1's cost breakthrough, we must put ourselves in the shoes of the potential victim. The victim must decide whether to leave the market or stay. The victim knows that if it leaves the market, it can pursue

other investment options. While the victim finds these options less desirable than its present business, they are nonetheless profitable. Moreover, they can presumably be pursued without risk of predatory strategies. On the other hand, the victim recognizes that if it remains in the market, one of two things will happen. The victim will find that Firm 1 has indeed achieved a cost breakthrough, in which case it stands to lose everything through bankruptcy. Or, the victim will discover that Firm 1 is bluffing, in which case it will be able to remain in its existing profitable market.

The victim must consider the probability that Firm 1 has made a cost breakthrough and its expected returns if it stays or leaves the market.[246] This example shows that if the victim has an alternative (but less profitable) investment available if it withdraws its capital, the victim may chose to leave the market even when it thinks it probable that the victim is bluffing.[247] The only way that the victim and consumers can attempt to rectify this outcome is by bringing, or persuading the government to bring, a predatory pricing suit.

A limiting factor in applying a cost signaling theory is the possible inconsistency between the low price, predatory bluffing strategy and subsequent recoupment. Under the recoupment requirement of *Brooke*, as under our proposed approach, it must be probable that the predator can recoup its losses by raising price after the prey leaves. However, an attempt to do so risks revealing the signaling strategy to the prey and other potential entrants, causing them to upgrade their estimates of market

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[247] This conclusion necessarily rests on specific factual assumptions. Suppose the victim's gain from staying in the market when the predator is bluffing is $95,000, its loss from remaining in the market when predator has made a cost breakthrough is - $5000, and its profit from withdrawing its capital and investing in the next best alternative is $55,000. In our discussion paper we show that if the victim believes the two events—bluffing or cost breakthrough —are equally probable, it will leave the market since the expected payoff from leaving is $55,000, while the expected payoff from staying is only $45,000. It is only when the probability of bluffing exceeds 60 percent that the victim will choose to stay. *See id.*

profitability. In the absence of substantial entry and reentry barriers, the prey or other entrants would then have an incentive to enter or reenter the market, preventing recoupment. Under these circumstances the threshold structural requirement that predatory markets have high entry and reentry barriers assumes particular importance.

We trace out the analysis of cost signaling in greater detail using a numerical illustration in the appendix. A detailed analysis of how reputation may magnify the effects of cost signaling can also be found there.

2. *Proof of Cost Signaling Strategy*

Proof of a strategy of signaling predation would require a showing of the following essential preconditions. As in the case of financial predation, fulfillment of these preconditions would establish a viable predatory strategy, but would not in itself prove an antitrust violation. Proof of violation would require proof of the other elements, as set forth above in our proposed rule.

(1). *Some event has occurred, known by the victim, that could have enabled the predator to significantly reduce its variable costs*. Cost-signaling is most plausible when there has been some development in the industry that could have reduced the predator's variable costs.[248] For example, the predator may have made an important innovation, hired a new management team or CEO, engaged in extensive downsizing, obtained exclusive access to a cheap source of foreign supply or other scarce input. Such development would normally be common knowledge in the industry and thus known to the victim. However, if the event is kept secret, the plaintiff would have to prove that it had actual

[248] The relevant cost is variable cost, or more specifically marginal or average avoidable cost, because a reduction in fixed cost does not impel the firm to reduce its price, while a reduction in marginal or avoidable cost necessarily leads the profit-seeking firm to reduce price and expand output. In the latter case the profit maximizing price where marginal cost equals marginal revenue is reduced due to the fall in short run marginal cost (marginal revenue remaining constant), leading to lower price and increased output. Thus, in this instance a price reduction may most convincingly signal reduced cost.

knowledge of the new development. While cost signaling might occur without such a triggering event, we would limit proof of cost signaling to those cases where the strategy is most likely to have been present.

(2) *At or about the same time the predator significantly reduces its price*. The timing of the price reduction must be sufficiently close to lead an outside firm to strongly suspect that the price reduction stems from the observed cost-reducing event.

(3). *As a result of such price reduction the victim could rationally believe that the predator may have lowered its costs, e.g. in the past the predator has reduced price when costs fell significantly*. The victim must have believed that the defined event could have caused the price reduction, but the victim's own testimony at trial is not credible since it would have an incentive to misrepresent, and because, as we have emphasized throughout, proof of predatory pricing should not rest on reflective evidence of subjective belief. Moreover, because of its self-serving nature, even contemporaneous documents prepared by the victim might be biased, designed to influence possible future litigation.

Thus, we suggest that the victim's belief be tested by the standard of a reasonable firm: Would a representative firm in the industry reasonably believe that the observed event significantly caused the price reduction? Such belief would be reasonable if either (i) the predator has in the past actually reduced its prices when costs fell, or (ii) the price reduction followed an announcement by predator that it had reduced its costs. Such a belief would *not* be reasonable if it is commonly known in the industry that the predator's costs have not fallen or if the victim itself knows this fact. Of course, the rational firm need not have reason to believe with certainty that the predator has achieved a cost breakthrough,

only that it is significantly probable.

More incriminating evidence may sometimes be available, which would strengthen the victim's belief that the price reduction is predatory. Such evidence includes (i) false announcements of a cost breakthrough, R&D development, or other event that could significantly reduce predator's costs, (ii) biased cost reports or similar accounting distortions made available to the public or to the industry, or (iii) proof of a corporate plan to engage in cost signaling.

(iv) *The possible cost reduction is of sufficient magnitude to require the victim to exit or to limit its expansion into other markets*. The price reduction must have reasonably caused the victim to leave the market or restrain its future growth or expansion. The best objective indicator of whether the price reduction had this effect is the reasonably anticipated size of the price reduction. Would a reasonable firm of comparable size to the prey deem the price reduction to be large enough to induce the prey's market exit or constrained operations?

See the appendix for an illustration of how we apply these criteria to the facts of a specific case.

VII. POSSIBLE OBJECTIONS AND COUNTER STRATEGIES

Critics of strategic analysis suggest a variety of objections and counter strategies by which either the prey or consumers, or market conditions, can foil predation.[249] These include (1) coalitions between the predatory victim and its customers bypassing the predator, (2) coalitions among victims coordinating a defensive strategy, (3) counter-threats by the victim to enter the predator's other markets, (4) the classic "chain store paradox" that assertedly makes predatory strategies non-credible,

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[249] *See* Frank H. Easterbrook, *Predatory Strategies and Counterstrategies*, 48 UNIV. CHI. L. REV. 263 (1981) [hereafter Easterbrook, *Predatory Strategies*].

(5) customer stockpiling, (6) mutual ignorance of the predator and the prey about market conditions, and (7) sale of the victim's assets to a successor firm if the victim fails.[250] In addition, a recent critique asserts that managerial compensation contracts provide no incentive for managers to engage in predation.[251]

A. *Possible Counter Strategies*

A fundamental weakness of the asserted counter strategies is that they implicitly assume(a) that market participants have full information or at least symmetric information. The consequences of assuming perfect and symmetrical information are striking. If market participants are fully and equally informed, and if credit markets are similarly well informed, for example as Judge Easterbrook generally assumes, then there is no need to pursue elaborate counter-strategies. The prey and its investors will see through the predator's strategy and simply remain in the market, drawing funds if necessary from willing financial institutions. But this assumption rejects a fundamental premise of modern economic theory that firms typically act on the basis of imperfect information, and that a firm is likely to know more about its own costs and strategies than an outside rival.

In addition, the counter strategies thesis faces other impediments, including the possibility of effective counter moves by the predator, the limiting constraints that transaction costs place on

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[250] It is important to state the limitations of the counterstrategies argument and of our rejoinder. Unlike the strategic theories considered in this paper, the counterstrategies that assertedly foil predation do not rest on an equilibrium analysis—an exhaustive and logically rigorous analysis that works out all moves and counter-moves to the described strategies. Instead the argument is simply that the counterstrategies are plausible. Since no equilibrium analysis or model is typically offered, we can of course present no counter-model. The best we can do is to show why the asserted counterstrategies are not plausible and identify problems that the asserted counterstrategies could overcome only by an analysis as rigorous as that contained in the economic theories described in our paper. Absent this, the counterstrategies do not provide basis for rejecting our proposals. We are indebted to Alvin Klevorick for pointing this out.

[251] JOHN C. LOTT, JR. *supra* note __, at 29-30.

coordinated group action, the free rider problem that hampers coalition formation by predatory victims and their customers, the fact that in any customer bidding contest the predator can generally outbid the prey since the predator earns monopoly profit if it retains its monopoly, while the prey presumably earns only a competitive return in competition with the predator. Finally, a counter-coalition involving rival firms may in some cases raise antitrust problems and may also be difficult to enforce.[252]

To illustrate the difficulties, the counter strategy thesis holds that an entrant can foil predation by entering into long term contracts with its customers. Assertedly, customers have an incentive to sign such contracts because the entrant offers them a lower price than the monopoly price they would otherwise pay. Further, entrant can overcome any customer reluctance to sign by making the contracts contingent on the signing of enough other customers to assure entrant's viability.[253] However, this scenario becomes doubtful when information asymmetry and other factors are taken into account. To begin with, information asymmetry may block coalition formation. For example, in the case of cost signalling, if a poorly informed prey is misled by the predator's low price into believing that the predator has low costs, why wouldn't customers be similarly deceived, in which case the coalition will not form? If somehow customers are better informed, why can't the prey discover the same information on its own, for example by asking customers, in which case there is no information asymmetry?

Second, the predator may have anticipated the entrant's counter strategy by binding its customers to long term contracts before the entrant begins marketing its product, possibly reinforced by

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[252] *See generally*, Louis Kaplow, *Extension of Monopoly Power Through Leverage*, 85 COLUM. L. REV. 515, 528-38 (1985) [hereafter Kaplow, *Extension of Monopoly*].

[253] Easterbrook, *Predatory Strategies*, *supra* note ___ at 271.

penalty provisions for breach.[254] Moreover, the predator need not bid against entrant for all future customers, but only for sufficient customers to make entry non-viable. As a recent economic paper shows, as the number of customers increases, the probability that any individual customer is "pivotal" to the blocking of the prey becomes smaller and smaller. As a result the amount the predator must pay to each contested customer shrinks drastically, so that the predator may need to pay customers very little to foil the entry attempt.[255] Moreover, as outlined above, the ability of the predator to outbid the prey and especially to capture pivotal customers may allow it to frustrate the entrant's contingent contract strategy.

Third, persuading large numbers of customers to sign long term contracts may involve substantial transaction costs and encounters a free rider problem. Each customer has an incentive to hold back from signing the contract, preferring to let others take the risk of provoking the predator, who is likely to be the dominant, if not the only supplier. Customers will naturally prefer to let others take such risks, while sharing the benefits of competitive suppliers if entrant becomes viable.[256] Free rider problems are lessened, but not removed even if entrant makes its contracts with customers contingent on signing of enough other customers to assure entrant's viability. Until the entrant has actually established its sustainability in the market, a customer's risk-preferred strategy is to stay out of the coalition. Moreover, as outlined above, the ability of the predator to outbid the prey and especially

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[254] *See* Philippe Aghion and Patrick Bolton, *Contracts as a Barrier to Entry*, 77 AM. ECON. REV. 388, 396-97 (1987) and Joseph F. Brodley and Ching-to Albert Ma, *Contract Penalties, Monopolizing Strategies, and Antitrust Policy*, 45 STAN. L. REV. 1161, 1163 (1993).

[255] Zvika Neeman, The Freedom to Contract and the Free Rider Problem (B.U. Dept. Econ. Working Paper, 1997). *See generally*, Eric B. Rasmusen, J. Mark Ramseyer & John S. Wiley, Jr., *Naked Exclusion*, 81 AM. ECON. REV. 1137 (1991); Ilya R. Segal & Michael D. Whinston, *Naked Exclusion: Comment*, AM ECON. REV. (forthcoming).

[256] *See* Aghion & Bolton, *supra* note at 398; Kaplow, *Extension of Monopoly*, *supra* note __ at 531-536; Rasmussen et al., *supra note* __, at 1141, 1144.

to capture pivotal customers increases its ability to frustrate the entrant's contingent contract strategy.

Similar problems confront other asserted counter strategies. A coalition between the entrant and its rivals, for example other potential entrants, such that each enters one of the predator's several markets, faces formidable transaction costs that hinder coordination of entry by other entrants into multiple markets, each subject to its own particular local conditions. In addition, coalition formation encounters a free rider problem because each member would prefer that others take the risk of entering the predator's market, including antitrust risks since the coalition divides the entry markets between competitors, and enforceability is doubtful because an injunction compelling market entry is not feasible and damages appear highly speculative.

A similarly unlikely counter strategy is a threat and binding commitment by the prey to enter the predator's other markets in response to the predator's low price in the prey's home market.[257] It is unclear how the entrant is to make such a binding commitment, other than by simultaneously entering both markets, but then it would have doubled its potential loss and also doubled it difficulty in raising capital. Further, as Judge Easterbrook acknowledges, the predator can respond, by itself making an equally binding commitment not to accede to the multiple entry counter strategy. Finally, if the predation is based on reputation effect, for example reputation as a low cost firm, asymmetric information makes the strategy doubly doubtful. If the prey is deceived or uncertain about the predator's costs in its home market, why would it know more about the predator's costs in other markets or wish to increase investment and expected losses by entering the predator's other markets?

Customer stockpiling of a price-reduced product is an unlikely counter strategy because if

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[257] *See* Easterbrook, *Predatory Strategies*, *supra* note __, at 285.

customers believe the predator's low price reflects a sustained cost breakthrough, why would they invest in unneeded inventory? Even if customers recognize the price as predatory, they may lack storage facilities or the capital to support stockpiling. Nor will customers know whether the price will fall further or how long the low price will endure. The same limitations apply to wholesale suppliers. Such intermediate suppliers, for whom the product may be but a small part of their operations, are likely to be even less inclined to speculate on whether the low price is based on a cost reduction or is predatory. Finally, services, such as cable TV and telephone service, cannot be stockpiled at all (although long term supply contracts are a possible substitute).

The objection is also made that the "chain store paradox" would cause multi-market predation strategies to unravel.[258] The idea here is that it would not be rational for the predator to take losses in the last market the prey enters because at that point the predator has no future reputation to maintain; so the prey would not be deterred from entering the last market. By similar logic, called backward induction, the prey would come to the same conclusion in the next to last market, and indeed in all earlier markets. This logic is now questioned if there is no well defined final period in which interaction takes place[259] or the precise motive behind the predator's aggressive pricing in not perfectly known, and controlled experiments have failed to validate the conclusions of the theory.[260] For these reasons

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[258] *Id*., at 285-86.

[259] Indeed, in reputation predation if the chain is of indefinite length, there is no last period or market where the predator has no future reputation to maintain. In every market or period he has the same reputation to maintain, so that if it is rational to incur losses in any one period to maintain future reputation, it is always rational for the predator to incur these one time losses. Note that indefinite length is not infinite length; it just means that there is no defined last period or last market in which the interactions takes place.

[260] *See* Thomas Palfrey & Richard McKelvey, *An Experimental Study of the Centipede Game*, ECONOMETRICA (1992); Yim Joo Jung et al., *On the Existence of Predatory Pricing: An Experimental Study of Reputation and Entry Deterrence in the Chain Store Game*, 25 RAND J. ECON. 72 (1994).

the counterstrategies objection is not persuasive.[261]

B. *Acquisition of Prey's Assets by Successor Firm*

Perhaps the most insistent critique of a predatory pricing strategy is that even if the prey is forced to exit, the predator has accomplished nothing because the prey's assets remain in the market. Indeed, the prey's assets are apt to be sold at a low price, giving the successor lower costs than the defeated prey. Thus, it is argued, the predator now faces a stronger rival than before. But this critique is flawed.

First, the objection does not apply to predation that disciplines, rather than excludes, the prey. Predatory pricing properly includes cases where the entrant does not withdraw from the industry, but is discouraged from making additional investment or developing new products, or where other firms are deterred from entering the market.[262] In either case, the prey's assets are not available for purchase.

Second, the prey's sunk assets may be insufficient to achieve an efficient scale of operations, so

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[261] Judge Easterbrook also argues that mutual uncertainty as between the predator and prey breaks down the predictiveness of strategic theories and prevents predation. But this objection neglects the strategic power of commitment. Taking Judge Easterbrook's example, if the predator acts first, reducing its price to signal low costs, it has committed itself. It can only reverse its low price policy by revealing its own weakness (its high costs). Thus, the predator now has a greater incentive to maintain its low price to avoid becoming worse off than before it initiated the price cut. Under these conditions the prey realizes that it is futile to fight back unless its costs are low because this would simply lead to a mutually destructive price war. Thus, a signaling strategy may under conditions of sequential action be as effective, or even more effective against a high cost entrant under an initial state of mutual ignorance than when the predator has an information advantage. On the other hand, when the prey truly has lower costs, a prolonged price war might benefit consumers.

John Lott also raises the mutual uncertainty objection, arguing that the entrant may have an informational advantage over the incumbent since it typically has private information on its own strategic intentions: if entrant plans to enter, it can gain by shorting the incumbent's stock, and if it plans to exit it can gain by buying incumbent stock. The gains the entrant can obtain through such stock trading would then tend to introduce a countervailing effect in standard strategic entry deterrence models. See JOHN C. LOTT, JR. *supra* note ___, at 96-116. However, there appear to be virtually no known instances of such stock speculation and it remains unclear how important such an effect can be. Moreover, it would apply to all private information held by a firm about its operations and business strategy.

[262] *See* Paul Milgrom, *Predatory Pricing*, THE NEW PALGRAVE DICTIONARY OF ECONOMICS 937; 3 AREEDA & HOVENKAMP, ANTITRUST LAW ¶ 723a (Rev. Ed 1996) ("drives out, excludes or disciplines rivals").

that the successor would not be viable without further financing even if the assets were transferred at zero price. An example, might be the Sacramento cable TV case where the entrant's built out facilities were probably not viable for a stand alone cable competitor, due to pecuniary scale economies in purchasing programming.

Third, as a separate but related point, the objection will often not apply in network industries, where the predator's product has become predominant or the industry standard. A successor firm seeking to acquire the prey's assets would have to reverse that developed consumer preference, as well as perhaps assemble its own network of outlets and a specialized work force. This is unlikely to be an attractive investment after the industry has reached the tipping point, favoring the predator's product as the industry standard.

Fourth, the objection will not apply to fixed cost assets without large sunk cost components, such as aircraft, ships, buses, and other mobile assets where reputation and brand recognition are essential to local market success and are not available for purchase. For example, if a small airline is excluded from a local market, but remains in business elsewhere, it will not wish to sell its brand name and associated reputation. On the other hand, if the small airline is forced out of the industry entirely, what will its reputation and brand name be worth, after it has suspended its flight schedule, frustrated consumers and left ticket holders with subordinated bankruptcy claims in lieu of tickets? In such cases the physical assets of the failing firm may be offered for sale, but they will not be available at a reduced price. Instead the assets will be sold in a wider market, perhaps national or international in scope.

Fifth, successful predation raises a reputational barrier to further entry and potential entry since

the predator's prior predatory conduct exhibits its predatory character to other market entrants. This in itself may deter an acquiring firm from exposing itself to what is now a greater perceived risk than the original entrant faced. The perceived risk is greater because of the predator's conduct.

Sixth, closely related to the last point, the successor entrant may face a customer free rider problem. Customers having once had their supply interrupted, may not wish to suffer the same inconvenience again before a successor is well established. In informational terms customers receive new information from the demonstration of incumbent's predatory conduct. The resulting uncertainty about the successor's duration causes the customers to reduce their estimates of the benefits of switching to the entrant. For example, customers of a failed airline who have lost their frequent flyer miles may not wish to take a second chance with a newly established airline. Thus, customers may hold back from dealing with the successor, preferring to let other customers take the risk of interrupted supply. But when everyone acts this way, the successor entrant never assembles the critical mass of customers necessary to support entry.

Finally, the objection does not apply to the firm that has the greatest incentive to acquire the prey's assets—the predator itself. The prey's assets will always be worth more to the predator than to any other acquirer because the predator gains market power, while other potential buyers can expect to earn only a competitive return on the acquired assets. Certainly, predation followed by predator acquisition of the prey has happened in the past, as we discuss above in the Wisconsin Telephone

illustration.[263] But current examples also occur.[264]

While it might appear that the antitrust laws would bar predator acquisition of the prey, the failing company merger exemption may shield otherwise objectionable acquisitions. The exemption overlooks competitive risks inherent in such acquisitions in the interests of creditors, employees, and other corporate constituents, provided a good faith effort has elicited no alternative offers presenting less anticompetitive risk and certain other conditions are met.[265] To be sure, the acquisition would have to be prenotified to the antitrust agencies[266] and the agencies would certainly not clear the acquisition if aware of the predatory conduct. But they may not be aware. The proceeding is entirely administrative, and it is unclear who would inform the government that the failing firm's plight was caused by predation. Surely not the predator, who would have no desire to scuttle the transaction. The prey itself is a consenting party, attempting to salvage what it can from a failed venture, so it would also lack incentive to reveal the predation. Indeed, the acquisition agreement would probably require the prey to release all claims against the predator. Possibly a competitor might complain, but no other competitor may exist, or existing competitors might welcome increased concentration, tacit collusion and anticipated higher prices. Even if the government knows the industry has sustained a price war, in the absence of complaint, it might simply conclude that the market is highly competitive. Finally, acquisition of stock or

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[263] *See supra*, text accompanying notes ___; *see also* Malcolm R. Burns, *Predatory Pricing and the Acquisition Cost of Competitors*, *supra* note _____ (price cutting by American Tobacco to force rivals to sell out to trust at low prices); *cf.* Granitz & Klein, *Monopolization by Raising Rival's Costs: The Standard Oil Case*, *supra* note __ (purchase of rivals weakened by predatory conduct at distressed prices).

[264] In the Sacramento Cable TV case a prior entrant seeking to compete with incumbent cable company was purchased by incumbent, as part of settlement of predatory pricing suit (which also included a 5-year noncompete clause). Hazlett, *Predation in Local Cable TV Markets*, *supra* note __ at 616-617. *See also* Prestressed Concrete, Inc. v. Bladholm Bros. Culvert Co., 498 N.W.2d 274, 1993-1 Trade Cases (CCH) (Minn.App., April 6, 1993 (purchase of predatory victim's assets in non-price case)).

[265] International Shoe Co. v. FTC, 280 U.S.291 (1930); 1992 Horizontal Merger Guidelines § 5.0; *see generally*, 4 AREEDA, HOVENKAMP & SOLOW, ANTITRUST LAW (Rev. Ed, 1998) ¶¶ 953, 954.

[266] *See* Hart-Scott-Rodino Act, 15 U.S.C. §18a.

assets of less than $10 million need not be reported at all.[267] Thus, acquisition of the victim by the predator is not an impossible outcome.

C. *Managerial Incentive to Predate*

In a recently published critique of strategic analysis (which does not rest on an assumed world of perfect information) John Lott questions the credibility of predatory actions by large widely held corporations when their managers do not have any apparent financial incentive to engage in predation.[268] Lott is concerned that managers' compensation may be primarily a function of short run profit, in which case they may not be willing to incur predatory losses. In practice, however, managerial compensation packages are designed to align managers' objectives with those of shareholders. Compensation packages typically contain a fixed salary component, a percentage of short run profits, and a participation in the firm's stock (through stock option plans)[269].

While managerial incentives may be a relevant consideration in assessing the plausibility of a predatory action by widely held firms, it does not follow—as Lott claims—that all modern strategic theories of predation are flawed because they fail to consider managerial incentives.[270]

At best his evidence casts doubt on existing theories of entry prevention relying on an explicit

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[267] *See* 15 U.S.C. at §18a(2)(A).

[268] *See* JOHN C. LOTT, JR. *supra* note ___, ch. 2.

[269] This type of contract is now standard for executive compensation. Lower level managers also increasingly have similar compensation packages, but the lower one goes down the hierarchy the more implicit incentives in the form of promotion or bonuses matter. *See, e. g*., PAUL MILGROM AND JOHN ROBERTS, ECONOMICS, ORGANIZATION AND MANAGEMENT, ch. 10 (1992).

[270] Nowadays managerial incentives are unlikely to be a critical issue since most publicly traded firms do have compensation packages in place which are designed to align their objectives with those of shareholders. Admittedly, in Lott's empirical work this issue may be more important as his sample includes a large proportion of observations from the pre-1975 "populist" antitrust enforcement era, at a time when managerial incentive compensation was primitive. *See* JOHN C. LOTT, JR., *supra* note ___, at 29-30.

commitment to reward managers for keeping entrants out (or punishing them should entry occur)[271]. Besides the lack of evidence supporting these theories—as revealed in Lott's empirical research—there are also theoretical difficulties relating to the lack of commitment power of such contracts (when shareholders and managers can easily change the contract following entry if it suits them), which cast doubt on their plausibility. This is why we do not discuss these entry prevention theories in our paper.

Apart from these theories of entry prevention, which rely on the existence of explicit managerial contracts to engage in predatory pricing, all the strategic theories discussed in this paper (including reputation effect theories) are immune to the Lott critique. Indeed, these theories only require that managers act in the interest of shareholders, when there is separation of ownership and control. If the managerial incentive package aligns the manager's interest with those of shareholders, then there is no longer a meaningful distinction to be drawn between managers and shareholders. Predatory strategies can then be considered solely from the viewpoint of the shareholders' interests. Thus, as long as there is no clear evidence that managers' financial interests were not in line with those of shareholders and that, contrary to shareholders, managers had no implicit or explicit financial incentive to engage in predation, there is no reason to be concerned that managers may not want to execute a strategy that is in their shareholders' interest.[272]

Even over the sample period considered by Lott it is not possible to find any statistically significant evidence that managers' objectives in firms found to engage in predatory pricing were not in

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[271] *See* Giacomo Bonanno & John Vickers, *Vertical Separation*, 36 J. INDUS. ECON. 257-265 (1988); Chaim Feshtman & Kenneth Judd, *Equilibrium Incentives in Oligopoly*, 77 AM. ECON. REV. 927-940 (1987).

[272] Even if managers' explicit financial interests do not appear to be in line with those of shareholders, managers' overall objectives (taking into account implicit and explicit incentives) may still be. As is often stressed in the managerial compensation literature, a large fraction of managerial incentives is implicit so that a calculation based only on explicit contractual compensation could be highly misleading. *See e.g.*, PAUL MILGROM AND JOHN ROBERTS, *supra* note __, ch. 10.

line with those of shareholders. Lott's main statistically significant finding is simply that compared with a sample of firms that were not found to engage in predatory pricing the sensitivity of managers' compensation to short run profits in firms that were guilty of predation was slightly higher. That is *not* the same as saying that managers in those firms had no interest in pursuing a predatory strategy.

CONCLUSION

The challenge for predatory pricing policy is to develop a legal rule that is neither seriously over inclusive nor excessively under inclusive. Present legal policy is deliberately under inclusive, and for understandable reasons. Until recently economics had no rigorous explanation of how predatory pricing could be rational business behavior. Courts, applying an ad hoc approach during an earlier time of expansive antitrust enforcement, sometimes condemned as predatory conduct that was doubtlessly competitive. Following Areeda-Turner, the courts fell back on the economics that was known – static analysis in a world of perfect information, which theory as well as empirical studies appeared to support. Accordingly, courts adopted a short run cost rule that was deliberately underinclusive. These under inclusive tendencies became more acute, following the Supreme Court's decision in *Brooke* when the difficulty of proving predatory pricing in the lower courts amounted to a virtual per se rule of non-liability. Yet at the same time *Brooke* with its emphasis on closely analyzing the scheme of predation and recoupment had identified the key elements needed for a more balanced approach.

Economic development over the last 20 years of a rigorous analysis of predatory pricing provides the tools required to achieve a more effective legal policy. Economics can now explain when predation can be rational, or in *Brooke's* terms when it can enable profitable recoupment, casting new light on earlier examples of predatory pricing. The further challenge for legal analysis is to develop

workable legal rules to guide enforcement agency policy and judicial decisions. To accomplish this we propose a structured rule of reason, including a fully specified efficiencies defense. Under such an approach enforcement would focus on cases where market structure and conduct makes predation plausible and where anticompetitive effects have occurred, or are dangerously probable. Equally important, the finding of predation would be subject to an efficiencies justification where below-cost pricing is necessary to achieve significant efficiencies, including dynamic efficiencies. Such an approach, not dissimilar in scope to what courts now apply under the Rule of Reason and non-price predation, offers increased promise of achieving a balanced legal policy that more effectively protects competition.

VII. APPENDIX

1. Cost Signaling: Theory

As developed in the text, a strategic analysis of cost signaling shows that under a range of plausible conditions, the victim will leave the market even though it strongly suspects the predator is bluffing. A simple example demonstrates how this striking result may occur. Two firms are in competition and at the outset each has the same costs. Each occupies a certain market niche, for example each firm may have a core of dedicated customers or a distinct geographic location that assures the firm's continued presence in the market despite its lack of cost advantage over its rival. While each firm has alternative investment options, these are less favorable than remaining in the

market.

More specifically, suppose that each firm has the same unit costs of $50. Taking advantage of its niche advantage, each firm sells at a price of $60, earning a profit of $10 per unit. Assume that each firm sells 1000 units at that price, and thus each currently earns $10,000 (1000 X $10). The competitive situation is quite stable. If one firm sought to invade the territory of the other, it would have to overcome the home firm's niche advantage and would incur costs which would make such an invasion unprofitable.[273]

To make the signaling strategy explicit we consider two alternative scenarios, depending on whether Firm 1 makes a cost breakthrough. In the first scenario Firm 1 achieves a cost breakthrough, which its rival observes. In the second scenario, Firm 1, unable to achieve a cost breakthrough, attempts to bluff its rival through cost signaling. In both cases the price reduction may induce the potential victim to leave the market. But in the first case — where there is a cost breakthrough — exit is economically desirable, while in the second — where no cost breakthrough occurs — exit harms consumers and reduces economic welfare. We analyze the two alternatives in turn.

Case 1: Cost Breakthrough Observed by Rival

Firm 1 makes a major technological breakthrough, such that it is able to slash unit costs from $50 to $20. The cost reduction overwhelms the other firm's niche advantage. As a result Firm 1 is able to cut price to a level that enables it to exclude its rival even when charging the profit maximizing monopoly price. Thus, under its new cost structure Firm 1's price falls from $60 to only $40, Firm 1

[273] Thus, suppose that to invade its rival's territory Firm 1 must incur added costs of $5 per unit, which would reduce unit profit from $10 to $5. At that reduced level of profit Firm 1 would lose its incentive to invade its rival's market if we assume each firm has alternative investments that would earn more than $5 per unit.

now captures all of its rival's customers and also attracts new customers, expanding its total sales from 1000 to 3000.[274]

Case 1 provides an example of socially desirable cost signaling. While Firm 1 has excluded its rival from the market, this outcome is in all respects desirable since now the whole output is produced at a unit cost of $20 and market price has declined from $60 to $40. Even customers of the excluded firm are better off since they receive a price reduction greater than the $5 dislocation or switching costs they bear in shifting to Firm 1. Moreover, innovation is fully rewarded by allowing Firm 1 to capture a monopoly rent legitimately earned. Finally, even if the second firm's exit leads Firm 1 to raise price above the old price of $60, so that consumers are worse off, the cost saving achieved by Firm 1 may still produce an overall increase in total economic welfare or surplus (depending on elasticity of demand).[275]

Case 2: Bluffing or Signaling Strategy

We now assume that Firm 1 has achieved no cost breakthrough, but still lowers its price to $40 in an effort to mislead its rival and induce it to leave the market. The rival, unable to observe Firm 1's costs, sees only that Firm 1 has reduced its price below the rival's cost. The rival must now decide whether Firm 1 has indeed achieved a cost breakthrough, in which case it should cut its losses and quit the market; or whether Firm 1 is bluffing, in which case the rival should stay in the market.

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[274] Firm 1's decision to lower price and take all of its rival's customers is straightforward. By cutting price to $40, Firm 1 earns unit profit of $20 ($40 - $20), which is a smaller margin than it would have earned had it maintained the old price of $60. But Firm 1 earns increased profit on its expanded customer base ($20 X 3000 = $60,000). This is its maximized profit. If it charged a higher price, its total profit would fall (even though its unit profit rises).

[275] However, competition between customers may be distorted. The customers of the excluded firm must incur the cost of switching to Firm 1, while other customers do not bear such costs. But of course, even switching customers benefit from the price reduction, if to a lesser degree.

Firm 1 has every motivation to bluff. If it can induce its rival to leave the market, it can double its earnings by capturing its rival's customers and returning the price to $60 (assuming entry and reentry barriers). To be sure, Firm 1 must bear the costs of the predatory price reduction. But in our example the future monopoly profit will far outweigh the cost of the price war if it is of limited duration.[276] Moreover, the victim, if it has other investment options (as we assume), may find it advantageous to decide quickly whether to leave the market.

In order to think about its decision systematically the victim might prepare a simple table of the possible outcomes from its decision to leave the market or stay:

	Victim's Payoff
Leave market	$55,000[277]
Stay in market when predator has	
achieved cost breakthrough	-5,000[278]
Stay in market when predator is	
bluffing	95,000[279]

[276] At a price of $40 Firm 1 with unit costs of $50, loses $10 per unit, or $10,000 per year in its home market, and up to $10,000 per year in its rival's market, depending on the fraction of the market it captures before the rival capitulates. However after the price war, it stands to increase its future earnings by $100,000 through its sales in the victim's market ($10,000 X 10). (To keep the example as simple as possible, we assume the firms only operate for two periods, the present and the future. Discounted future profits are 10 times present earnings).

[277] If victim leaves the market, its best alternative investment will allow it to earn $5 per unit or a total of $5000 in the current year (period 1) and income of $50,000 (10 X $5000) in the future (period 2), or a total of $55,000.

[278] If victim stays in the market in the face of a cost breakthrough by Firm 1, it loses $5000 in the first year, and thereafter goes bankrupt, earning no profit.

[279] If victim stays in the market when Firm 1 is bluffing, it loses $5000 in period 1 (during the price war), and thereafter earns $100,000 (10 X $10,000), resulting in a net gain of $95,000.

Examining this table the victim sees that if it leaves the market it can earn $55,000, which is less than its current profit, but it is free of any strategic risk. On the other hand if the victim remains in the market, it can either do much worse (losing $5000) if its rival has lowered its costs or much better (earning $95,000) if its rival is bluffing. The problem is that the victim does not know which event has occurred. The best it can do is to try to estimate the probabilities (however roughly) and calculate its expected payoffs in light of those probabilities. Suppose the victim believes that the two events -- bluffing or cost breakthrough -- are equally probable. In that event it will leave the market, since the expected payoff from leaving is $55,000, while the expected payoff from staying is only $45,000 (which is the average of the two remaining outcomes if we assume each is equally probable).[280] Indeed, even if the probability Firm 1 is bluffing is as high as 60 percent, the victim will leave the market.[281]

What this analysis shows is that the merely probable belief by the victim that the incumbent has reduced its cost can induce exit or prevent entry despite the substantial likelihood that the incumbent is bluffing.

2. Illustration: Bogus Competition in the Tobacco Industry

The American Tobacco Company engaged in many predatory and anticompetitive activities while building the tobacco trust from 1890 to 1911—the date the Supreme Court finally ordered its

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[280] The expected payoff from remaining in the market when the two possible outcomes (cost breakthrough or bluffing) are equally probable is .5 X -5000 + .5 (-5000 + 100,000) = $45,000. This is of course smaller than the expected payoff from leaving ($55,000).

[281] The victim's expected value from remaining in the market is the sum of the expected loss it encounters if Firm 1 has achieved a cost breakthrough plus the gain it will realize if Firm 1 is bluffing, which together total $55,000: (.4 X -$5000) + .6 X (-5000 + 100,000) = $55,000). As before, the victim's expected value in leaving the market is $55,000. Assuming the victim will remain in the market only if its expected value of staying exceeds its expected value from leaving, victim will exit since the two expected values are now equal.

dissolution.[282] One of American's predatory strategies involved the use of "bogus independents" in the plug tobacco market, which provides an interesting example of a possible cost-signaling strategy, and allows illustration of our proposed approach for cost signaling.

(i) ***Factual Summary***

In 1893, American Tobacco, which already controlled 85 percent of the cigarette market, entered the production of plug tobacco by merging five of the largest plug manufacturers into one corporation, Continental Tobacco. The trust grew by acquiring competitors—allegedly after lengthy and often severe price cutting. For example, when American's initial attempts to combine the plug tobacco producers failed, American engaged in below-cost pricing which resulted in losses of over $ 4 million.[283] As many as thirty acquired competitors were simply closed down. The trust would preserve the name, organization, and products of the acquired company, and when questioned, would persistently deny having control over them.[284] Trust members used fictitious names and unusual addresses in correspondence to conceal the relationship among the companies.[285] Compounding the intrigue, bogus independents actually gained entry into an association of bona fide independents that had been formed to provide protection from the trust.[286]

The use of bogus independents probably reduced the costs of acquisition. [287] According to

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[282] See United States v. American Tobacco Co., 221 U.S. 106, 184 (1911); see also, Report of the Commissioner of Corporations on the Tobacco Industry, U.S. Bureau of Corporations 1909, at 13.

[283] See American Tobacco, 221 U.S. at 161.

[284] See American Tobacco, 221 U.S. at 162.

[285] See Brief for the United States at 249, United States v. American Tobacco Co., 221 U.S. 106 (1911) (hereinafter Brief, American Tobacco).

[286] See Brief American Tobacco, supra note __ at 269. In addition, the secretary of the association, Friedlander, of the Day & Night Company, secretly sold out to the trust. These and others were apparently used to keep the trust advised. Id.

[287] See Malcolm R. Burns, Predatory Pricing and the Acquisition Costs of Competitors, 94 Pol. Econ. 266, 271 (1986) (hereinafter Burns, Predatory Pricing).

Malcolm Burns, "[i]f the trust effectively disguised its misconduct by initiating the price cutting from a secretly controlled subsidiary . . . the ensuing decline in the profits of a targeted competitor probably will be attributed to intensified and enduring competition,"[288] lowering earnings projections, diminishing growth opportunities and curbing investment—all of which should reduce the prey's market value and lower the amount required to acquire the prey.[289] As we suggest below, the use of bogus independents may have also served to induce actual independents to believe that the bogus rival had been able to reduce costs.

The original petition filed by the United States includes numerous examples of bogus independents, four of which were allegedly used to launch predatory pricing campaigns. We focus on one such example, Nall & Williams Tobacco Company of Louisville, a producer of plug tobacco. American used Nall & Williams as a so called "commercial wolf" to launch a predatory pricing campaign against the Nashville Tobacco Works of Nashville Tennessee. The scheme was discussed in a letter written from American Tobacco's vice president sent to the president of Nall & Williams, a secretly owned subsidiary.[290] In this letter the American Tobacco executive asks Nall & Williams to introduce a new brand of tobacco to compete with Nashville Tobacco Works. Nall & Williamson is to market the new brand as soon as possible. Sales, not profit is to be the goal. The subsidiary is to " enter upon a vigorous campaign, to be kept up until the desired end is accomplished." Regarding profits, the Tobacco executive writes, ".... while I would like you to show as much [profit] as possible, my idea is that you should not make money at expense of trade, providing, of course, that you are

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[288] Id at 271.

[289] Id at 271-272.

[290] See U.S. Supreme Court 1911, United States v. American Tobacco, 221 U.S. 106, testimony of C. C. Dula, 2:545.

getting this business from certain people."[291]

Nall & Williams advertised that it had no connection with the trust,[292] and it was even a member of the association of independents formed to provide protection from the trust.[293] The United States claimed that Nall & Williams' attack was "ferocious" and that the owners of the Nashville Tobacco Works "became convinced that they must either sell out to [the trust] or be destroyed."[294] In April 1906, under pressure from the predatory attack, the Nashville Tobacco Works secretly sold out to the trust. Nor did the deception stop at this point. Instead, following acquisition, the trust continued to operate Nashville Tobacco as an independent up until the time the United States filed its antitrust suit.[295]

(ii) ***Proof of Case***

(A) MARKET STRUCTURE FACILITATING PREDATION

From 1900 to 1910, the trust held the following average market shares: plug, 77.2%; smoking, 68.8%; snuff, 90.7%; and fine cut, 73.9%.[296] American Tobacco had an average market share in cigarettes of 86.1% from 1891-1910,[297] and controlled about 95% of the licorice root market, a key ingredient to plug tobacco.[298] Moreover the Supreme Court found that defendants had gradually obtained control over "all the elements essential to the successful manufacture of tobacco products,"

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[291] See id. at 2:528.
[292] See id. at 4:116.
[293] See Brief, American Tobacco, supra note _ at 269.
[294] See Brief, American Tobacco, supra note _ at 243.
[295] See id.
[296] See Burns, Predatory Pricing, supra note _ at 268 n.5 (citing U.S. Bureau of Corporations 1915, pp. 49, 84, 127, 138).
[297] Id at 153, table 52.
[298] American Tobacco, at 175.

and that "placing such control in the hands of seemingly independent corporations serv[ed] as perpetual barriers to the entry of others into the tobacco trade."[299]

(B) SCHEME OF PREDATION AND SUPPORTING EVIDENCE

The evidence showed that each of the preconditions for signaling predation was present.

(1) Some event has occurred, known by the victim, that could have enabled the predator to significantly reduce its costs

The "event" in this case study is the introduction by American of a new brand of tobacco into the territory of the Nashville Tobacco Works through its disguised subsidiary, Nall & Williams . The introduction of a new product sold at a low price could have reflected a lower cost process. New products may result from new production techniques or the acquisition of a cheaper source of supplies—both of which would qualify as an event that could have enabled the predator to reduce costs. The new product entered the market at reduced prices and thus the price reduction coincided with the "event." Of course, there could be other explanations for the price reduction, but the launching of a new product qualifies as an event capable of signaling a cost saving.

(2) At or about the same time the predator significantly reduces its price

Here the event and the price reduction coincide, so this requirement is easily met.

(3) As a result of such price reduction the victim could rationally believe that the predator may have lowered its costs

It is important to note that the Nashville Tobacco Works need only believe that it is significantly

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[299] Id at 190.

probable that Nall & Williams had achieved lower costs for it possibly to be induced to leave the market..[300] Applying this element, we would ask whether a reasonable firm would find it significantly probable that Nall & Williams had achieved cost savings? As mentioned, the introduction of a new product at very low prices could be indicative of some cost saving event. The prey might believe that Nall & Williams had achieved a new production technique or perhaps found a new, cheaper source of supply. Because of the great pains American took to conceal its relationship with Nall & Williams, Nashville Tobacco had little reason to suspect that Nall & Williams was an American Tobacco subsidiary, receiving subsidies from the trust to engage in predatory pricing. That left two remaining alternatives: Either Nall & Williams had launched a self-financed promotional or predatory pricing campaign, or it had achieved a significant cost saving.

Focusing on these alternatives, the self-financed promotion or predatory pricing explanation appears unlikely. Self-financed promotion is unlikely if the price cutting was as ruinous as the government claimed. A predatory price explanation is unlikely if, as seems plausible, the victim was ignorant of the deception and believed the predator to be a small independent firm. The victim would likely recognize that a predatory pricing strategy by a small independent could not be sustained. In that event, the intended victim, Nashville Tobacco, could simply ride out the attack, realizing that its adversary had limited assets. So neither of these alternatives would seem a likely explanation for the low pricing. Of course, Nall & Williamson might have obtained the support of a well funded financial backer, but why would the financial backer be interested in investing large resources in excluding another small rival when it would then face future competition from American, which was rapidly

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[300] See supra TAN_____ .

expanding its control over the entire tobacco industry?

The remaining possibility was that Nall & Williams had achieved significant cost savings. How else could a small independent producer of tobacco sell its product at such a low price for a sustained period of time? It seems reasonable that Nashville Tobacco would conclude that it was at least significantly likely that Nall & Williams had achieved a cost savings. To be sure this is only a probability, but as the cost signaling strategy shows, a substantial probability of cost reduction can drastically change the expected profit of remaining in the market.

(4) The possible cost reduction is of sufficient magnitude to require the victim to exit or limit its expansion into other markets

As mentioned, in April 1906, the Nashville Tobacco Works sold out to the trust due to the below-cost selling of Nall & Williams. The United States claimed that Nall & Williams' attack was "ferocious" and that the owners of the Nashville Tobacco Works "became convinced that they must either sell out to [the trust] or be destroyed."[301] Thus, the magnitude of the cost reduction clearly suffices to have substantially caused the victim's exit.

(C) OTHER ELEMENTS

The other elements necessary to sustain a violation need only brief discussion. The price cutting forced the prey to sell out secretly, thereby achieving the predator's exclusionary and deceptive purpose. Probable recoupment is supported by several factors. The predator's price cutting was part of a pattern of price cutting activity that led to its dominance of the tobacco and plug tobacco markets

[301] See Brief, American Tobacco, supra note _ at 243.

with high market share and what the Supreme Court described as "perpetual entry barriers."[302] . The cost of the predation was limited since the buyouts were typically made at low prices and the price cutting was restricted to the local operating area of the prey.[303] While ex post evidence of pricing effects is lacking, letters exchanged by trust members indicate that the trust intended to raise prices after the demise of rivals,[304] which certainly reinforces a conclusion of probable recoupment. Finally, reputation effects also enabled recoupment (but these effects do not appear to have stemmed from the cost signaling described here).[305]

Price was below ATC and may also have been below long run incremental cost since the petition charged that Nall & Williamson sold "below the cost of production" and American suffered heavy losses during the predatory campaign.[306] While the record allows no conclusion whether price fell below AVC,[307] that would not be an essential finding under our proposed approach. A business justification defense was apparently not raised. But had it been asserted, American would have faced a heavy burden in explaining its bogus competitor strategy and the great lengths to which it went in concealing its relation to its acquired subsidiaries. Such deception is consistent with the predatory cost

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[302] American Tobacco, 221 U.S. at 175.

[303] See Burns, Predatory Pricing, supra note _ at 271 n.12.

[304] See Malcom R. Burns, New Evidence on Price Cutting, 10 Managerial & Decision Econ. 327 (1989). Burns quotes three letters introduced into the record that support the proposition that American raised prices after a rival had been eliminated. One such letter includes the following statement, "It seems to me now with R. & W. [Rucker & Witten Tobacco Company, acquired by the trust after an alleged predatory attack] out of the way, is the time to make some money . . . ." Id. (citing United States Supreme Court 1911, supra note _ at 2:581-582).

[305] In his study of predatory pricing in the tobacco industry, Malcolm Burns found that American's price cutting campaign "created a notorious reputation that intimidated other competitors into selling out cheaply," leading to an estimated 25 percent discount due to reputation effects alone. Burns, Predatory Pricing supra note at __. Since the signalled costs were the bogus independent's costs, they would not enhance American's reputation as a low cost firm..

[306] See Burns, New Evidence, supra note _____ at 327 & n.5 (1989).

[307] American Tobacco, 221 U.S. at 161.

signaling strategy developed above and cannot easily be reconciled with any legitimate business purpose.

3. Cost Signaling Combined with Reputation Effect: Theory

A cost signaling strategy is even more powerful and plausible when combined with a demonstration or reputation effect. This may involve successive rivals within a single market or either current or successive rivals engaged in multiple markets.

We illustrate how reputation effects can facilitate cost signaling by two examples. The first example involves the same situation as the cost signaling case described immediately above, with the addition of a potential future entrant. The second involves a multi-market extension where the two initial rivals compete in two separate markets and where a price cut in one market has demonstration effects in the other market.

A. *Reputation effects within a single market: the efficient potential entrant*

Consider the cost signaling case described earlier. As the reader will recall, we assumed the industry had only two firms, each having the same costs. Predatory cost signaling was possible because there was some probability that one firm (Firm 1) had made an important cost breakthrough.

We now introduce an additional player: an efficient potential entrant. Suppose that the potential entrant has a cost advantage that would make entry profitable under current conditions, but would make entry unprofitable if Firm 1 has achieved a cost breakthrough. In such a situation possible reputation effects give Firm 1 an added incentive to engage in predatory cost signaling. If Firm 1 can convince its rivals and potential rivals that it has achieved a cost breakthrough, it can not only induce the

exit of its existing rival, but also prevent entry of a future rival. That is to say, successful cost predation against an existing competitor may create a reputation for low costs that deters entry by future rivals.

We describe the competitive interaction in words and then illustrate with a simple numerical example. Focusing first on the predator's existing rival, the presence of an efficient potential entrant reduces the existing rival's return from remaining in the market. This occurs because the existing rival's gain from continued market participation (the continuation benefit) will be diluted by future competition from the efficient entrant. Turning to the entrant, if the predator induces the existing rival to leave the market, this almost surely raises the entrant's estimate that the predator has achieved a cost breakthrough. As a market insider, the existing rival presumably knows more than the entrant, and thus the existing victim's exit powerfully reinforces the predator's cost signal. As a result, the predator's expected gain from predation under simple cost signaling is enhanced by the additional effect that cost signaling both induces the victim to exit and creates a reputation effect that deters future entry (including possible reentry by the excluded victim).

To illustrate this more exactly consider this simple numerical example, based on the facts used in our earlier discussion of cost signaling. As already mentioned, two firms compete in an industry in which each firm has the same costs. In the absence of a cost innovation each firm has unit costs of $50 and sells 1000 units (one unit each to 1000 customers) at a price of $60, thus earning $10,000 ($10 X 1000 = $10,000). If Firm 1 achieves a cost breakthrough, it is able to reduce unit costs dramatically, from $50 to $20, and to cut price to $40 (its profit maximizing price). At that low price Firm 1 captures all of its rival's customers and also attracts new customers (expanding its sales from 1000 to 3000).

Now introduce a potential entrant who enjoys a cost advantage over the two incumbent firms. Assume this efficient entrant has a low unit cost of $45 and a fixed entry or set up cost of $10,000. With a unit cost below the incumbent's $50 cost, the efficient entrant is ready and willing to enter the market, charging a price of $55. At this price neither incumbent has an incentive to stay in the market since, as assumed in our earlier cost signaling discussion, each incumbent has alternative uses for its capital that would enable it to earn more than the reduced profit now available.[308] In that event both firms would exit and the efficient entrant earns $10,000 ($10 each from its 2000 customers less its fixed set up cost of $10,000).

Suppose now that one of the incumbents (the predator), having made no cost breakthrough, follows a bluffing or signaling strategy, reducing its price to $40, which is $10 below its cost of $50. Assuming the other incumbent matches the price reduction, predator now loses $10 per customer or a total of $10,000 per year ($10 X 1000).

If the bluffing strategy succeeds, the predator benefits not only from the increased future earnings it gains by inducing its existing rival to exit, but also from the losses it avoids by deterring entry. Since these benefits are continuing, the predator recoups far more than the cost of the price war.[309] This simple example illustrates how a predator has an even greater incentive to engage in predatory pricing when its actions have reputation effects on new entrants.

Under these conditions both the existing rival and the entrant, observing the predator's price

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[308] If the incumbent reduces its price to $55 and is able to keep all of its customers, it earns only $5000. Each incumbent now sells its 1000 units at a price of $55 at a unit cost of $50 and earns profit of $5 000 ($5 X 1000) . But its alternative use for its capital (slightly) exceeds $5000. (The incumbent has already borne its fixed set up cost so it does not take this into account.)

[309] Thus, the predator increases its net welfare in the first year following the price war by $20,000 ($10,000 in increased earnings from eliminating its existing rival and $10,000 in the avoidance of losses had the potential entrant entered the market). Capitalizing this yearly return by a factor of 10 yields net benefits of $200,000 before discounting, much exceeding the predatory investment. See discussion of cost signaling, supra XXXX.

reductions, face a difficult choice whether to compete with the predator. Indeed, for the existing rival the prospect of continued competition with the predator is likely to be even less attractive than in the simple cost signaling case. Consider first the existing firm's decision whether to remain in the market. Irrespective of whether the predator has been able to reduce costs, the existing victim now has even less to gain by remaining in the market. Indeed, even if the victim discovers that the predator is bluffing, it now faces the threat of entry by the efficient entrant, which lowers the existing firm's expected future profit after the predator withdraws its price cut. Thus, Firm 1's predatory actions are even more likely to induce the victim to exit than before. In fact, in our numerical example the existing firm would want to leave the market under all circumstances.

A less drastic and more plausible outcome arises if the efficient entrant has limited production capacity and, as a result, lower fixed set up costs. In that event both incumbents may be content to remain in the market, accommodating the entrant and exploiting the residual demand curve. Thus, after the efficient entrant has disposed of its full output, the two incumbents, following an accommodating strategy, continue to charge their previous $60 price, serving a reduced base of customers.[310]

Under this more plausible scenario the existing rival would stay in the market if it is absolutely certain that the predator is bluffing. However, any small doubt concerning a cost breakthrough by the predator would be enough to induce exit. The modest profit the existing victim earns on its reduced volume of sales if the predator is bluffing would then be outweighed by even a small risk of the heavy loss the victim would sustain if the predator has achieved a cost breakthrough. This example illustrates

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[310] To illustrate more exactly, suppose that entry costs are $5000, that entrant can produce only 900 units, and that entry takes place at a price of $55. In that event the two incumbent firms could continue to charge $60, while retaining a (diminished) market share of 1100 customers, or 510 customers each, so that each incumbent would earn post-entry profits of $5100. Since, as previously assumed, each incumbent has an alternative investment that would yield profit of $5000, this is just enough to encourage them to remain in the market and accommodate the new entrant. The entrant would have profits of $9000 minus the $5000 fixed entry cost, or a net of $4000 under this scenario.

that the presence of a potential entrant increases not only the benefits of predatory action but also the existing victim's incentive to exit. These are very general effects arising in almost any situation where there is a possibility of future entry.

Moreover, the exit by the predator's existing rival also affects the likelihood of future entry. If the predator's price reduction causes the existing rival to leave the market, the immediate effect is to reduce competition, making the market more attractive for entry. However strikingly, there is now an offsetting possibility that the potential entrant will be less likely to enter even though it could now enter at full production capacity. The existing rival's exit will almost surely raise the entrant's estimate that the predator has achieved a cost breakthrough. As previously discussed, the existing rival as a market insider, ought to know more about the predator's costs than a potential future entrant. The observed exit of the victim may therefore increase the entrant's belief that the predator has a cost advantage, discouraging entry.[311]

The reputation effect theories emphasize that the longer predatory action is pursued, for example the more often the incumbent firm responds with price cuts when its competitiveness is tested, the more potential entrants are inclined to believe that incumbent actually has low costs and is not bluffing. Thus, over time an incumbent can build a reputation for low costs by engaging in predatory pricing, making future entry less likely.[312]

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[311] If entrant now decides to enter despite Firm 1's price reduction and it turns out that Firm 1 was bluffing, entrant gains $10,000. In that event the entrant, facing only the competition of the predator, sinks the cost of entry of $10.000, sets a price of $55 and obtains a margin of $10 on 2000 customers, thereby earning $10,000. But if Firm 1 is not bluffing and has achieved a cost breakthrough, the entrant loses its fixed entry costs of $10,000. Thus, if the entrant's gain when the predator is bluffing is just equal to the entrant's loss when predator has made a cost breakthrough, the potential entrant will stay out of the market as long as the event of bluffing is not more likely than a cost breakthrough. That is to say, a 50% chance that the predator has achieved a cost breakthrough will deter entry.

[312] The chain store paradox imposes no obstacle to these conclusions. The reputation strategy just described is effective even if the market is profitable only for a limited number of periods. That is to say when the incumbent's costs are not perfectly known to its rivals, there is no longer a "chain store paradox". The entrant cannot confidently predict that predator will raise its price in the last period, by backward induction, also in the next to last period, and by similar reasoning in all previous periods. See discussion supra _____.

B. *Reputation Effects in the Presence of Multi-market Contact*

Demonstration effects may also arise when there is multi-market contact just as in the situation where there is a potential entrant in the same market. In both cases the introduction of a third party changes the incentives of the participants such as to induce reputation strategies. The only difference is that now the demonstration effect is directed towards the victim's other markets.

To see how demonstration effects arise when there is multi-market contact consider again the cost signaling situation described above, but now with two identical markets in which the predator and victim operate. Moreover, suppose that when the predator achieves a cost breakthrough, it can only gradually implement the cost reduction across the two markets. Thus, predator lowers its costs in Market 1 to begin with and in Market 2 only in the next period.[313] Under these conditions, the predator can reduce its price in Market 1, thus limiting the cost of its predatory action to only one market. Then, if the reduced price causes the victim to conclude that predator has lower costs, the victim will exit not only from Market 1, but eventually from Market 2 as well, so that the predator gets enhanced benefits from its cost signaling predation.[314]

Multi market reputation effects inhibit potential competition by the same dynamic that we described in a single market. Observing the exit or losses of the predator's existing rivals, potential entrants in both markets are induced to believe that the predator may have made a cost breakthrough. They are then less likely to attempt entry.

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[313] It is plausible that an innovative cost breakthrough can be implemented only gradually since investment in new producing facilities is risky until an innovation has been successfully produced and marketed. Only if there are arbitrage opportunities would it be likely to expect a simultaneous price cut across all markets. Note that cost signaling would not be credible if a cost breakthrough applies to both of the predator's markets, but the predator reduces price in only one market.

[314] While the prey may not exit immediately from Market 2 if it can earn an interim profit, it will leave when it perceives that the predator's cost reductions in Market 1 will be replicated in Market 2. Thus, the predator need not engage in a second costly price war in Market 2, although of course it must by some means inform the prey that the perceived cost reductions in Market 1 have been diffused to Market 2.