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The Consequences of Neoclassical Price Theory for U.S. Predatory Pricing Law

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I. Introduction

This article seeks to test the hypothesis that by adopting the basic principles of Neoclassical Price Theory (NPT) as the predominant analytical framework through which to evaluate predatory pricing claims, United States federal appellate judges have lowered the probability of plaintiffs winning those claims. NPT posits that suppliers act exclusively to maximize profits, "that demand curves slope downward, that an increase in the price of a product will reduce the demand for its complement, [and] that resources gravitate to the areas where they will earn the highest return".[1] NPT applies the microeconomic models of perfect competition and monopoly to analyze monopolistic conduct. The key variable on which NPT focuses is price: Prices provide the information necessary for market actors, including consumers, suppliers, and retailers, to generate the efficiency envisioned in perfect competition. The inefficiency created by market power — the loss of consumer and producer surplus depicted in monopoly models (deadweight loss) — justifies government involvement in dominant firm behavior.[2]

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[1] Richard A. Posner, *The Chicago School of Antitrust Analysis*, 127 U. PA. L. REV. 925, 928 (1979).

[2] William E. Kovacic, *The Intellectual DNA of Modern U.S. Competition Law for Dominant Firm Conduct: The Chicago / Harvard Double Helix*, 2007 COLUM. BUS. L. REV. 1, 20 (2007) (in evaluating antitrust enforcement generally and the influence of Harvard and Chicago scholars specifically since the 1970s, Professor William Kovacic has stated that "courts have relied almost exclusively on their assessment of whether challenged behavior reduces economic efficiency or is likely to do so").

All major schools of antitrust thought have adopted NPT as the relevant theory through which to evaluate anticompetitive conduct, to which each adds various assumptions. In response to Supreme Court decisions both aimed at protecting small businesses and devoid of economic reasoning,[3] the Chicago School argued that markets tend toward efficiency, that the motive to earn profits supercharges competition,[4] ensuring the transitory nature of market imperfections,[5] and "that judicial enforcement should proceed cautiously, lest it mistakenly proscribe behavior that promotes consumer welfare".[6] Moreover, the Chicago School objects only when purported exclusionary practices reduce productive and allocative efficiency, not when such practices merely transfer wealth from consumers to producers, leaving total wealth unchanged.[7] Chicago models based on NPT "have become widely accepted as the conceptual basis for antitrust law".[8]

The Harvard School originally expressed a more skeptical view towards the robustness of competition, including the deleterious competitive effects of product differentiation and concentrated market structures: The absolute number of firms in a market and entry barriers matter, as "new entry [does] not [necessarily] discipline anticompetitive practices in concentrated markets".[9] Post-Chicago scholars have employed game theory to challenge the Chicago presumption that monopolists have no incentive to engage in anticompetitive

[3] *See* William H. Page, *The Chicago School And The Evolution Of Antitrust: Characterization, Antitrust Injury, And Evidential Sufficiency*, 75 VA. L. REV. 1221, 1274 (1989) ("Although *Brown Shoe* and *Von's Grocery* have not been overruled, the underlying rationale for the anti-merger law has changed from an explicit protection of small business for its own sake to a more direct focus on issues of market power and the likelihood of collusion.").
[4] Frank H. Easterbrook, *Workable Antitrust Policy*, 84 MICH. L. REV. 1696, 1701 (1986) ("Competition is hardier than you think. The desire to make a buck leads people to undermine monopolistic practices.").
[5] *See* Page, *supra* n.3 at 1243 ("The Cost of erroneously finding a practice lawful, it is argued, is likely to be less than the cost of erroneously finding the practice unlawful, since the market will ineluctably erode private monopolistic practices, but inefficient governmental interventions will persist indefinitely.").
[6] Michael S. Jacobs, *An Essay on the Normative Foundations of Antitrust Economics*, 74 N.C. L. REV. 219, 222-223 (1995).
[7] *See* Page, *supra* n.3 at 1238.
[8] *Id*. at 1307.
[9] HERBERT HOVENKAMP, THE ANTITRUST ENTERPRISE 36 (2005).

practices,[10] more recently also arguing that competition does not necessarily prevent or remedy market failure and "that firms can therefore take advantage of [market] imperfections, such as information gaps or competitors' sunk costs, to produce inefficient results even in ostensibly competitive markets".[11] The Post-Chicago School also has expressed more faith in the ability of government to identify and remedy anti-competitive practices.[12]

The received wisdom is that the application of NPT to monopolization law has curtailed enforcement,[13] credit for which goes to both the Harvard and Chicago Schools. While Chicago scholars introduced price theory to monopolization law and glamorized it, Harvard scholars and judges converted economic arguments into workable legal tests, effectively driving those arguments into the Federal Reporter, by devising the tests for both predation[14] and antitrust injury,[15] by echoing and then cementing a legal wariness towards discouraging price cutting,[16] and generally by elevating hurdles to monopolization enforcement[17] because of a shared skepticism toward government involvement in dominant firm behavior.[18] Post-Chicago scholars have attempted to weaken this skepticism somewhat but have operated

[10] *See* David S. Evans & A. Jorge Padilla, *Designing Antitrust Rules for Assessing Unilateral Practices: A Neo-Chicago Approach*, 72 U. Chi. L. Rev. 73, 74 (2005).
[11] Jacobs, *supra* n.6 at 222-23.
[12] *See id*. at 260-61.
[13] *See, e.g.*, Page, *supra*, n.3 at 1233 ("Repeatedly, the application of the general theory has cast doubt on accepted monopolistic explanations for perplexing antitrust practices, limiting those explanations to narrower circumstances and suggesting potential efficiency explanations."). But advocates of applying NPT to monopolization law, even Chicago School advocates, never advanced a strictly *laissez faire* view of monopolization enforcement. *See id*. at 1307-8 (The Chicago approach "does not foreclose plaintiffs from producing evidence that refutes the efficient explanation for the practice. This approach also permits our knowledge about the nature of antitrust practices to develop over time.").
[14] HERBERT HOVENKAMP, HOW THE CHICAGO SCHOOL OVERSHOT THE MARK 110 (Robert Pitofsky ed., 2008).
[15] *Id*. at 112.
[16] Kovacic, *supra* n.2 at 21.
[17] *Id*. at 15.
[18] *Id*. at 80-81.

within the NPT framework, most persuasively by demonstrating how dominant firms can raise rivals' costs and prices more generally.[19]

In developing this study, therefore, no coherent theoretical alternative to NPT exists in the case law, so distinguishing between schools when attempting to test the effect of NPT on plaintiffs' probability of winning predation cases raises methodological challenges. After reviewing all reported Courts of Appeal and Supreme Court cases addressing predatory pricing claims since 1950 — 63 in total[20] — I conclude that employing NPT in predatory pricing law does not necessarily constitute "effects analysis," or assessing the legality of dominant firm behavior by determining, after the fact, whether it actually produces positive or negative competitive effects. Rather, the tools of NPT often attempt to *predict* competitive effects.[21]

To prove economic phenomena, economists usually engage in quantitative analysis or run regression analyses, selecting a dependent variable, representing the proposed effect or outcome of the hypothesis, and independent variables, representing proposed causes, or predictors, of the hypothesis.[22] This paper seeks to test the hypothesis that NPT has lowered the probability of plaintiffs winning predation cases by analyzing appellate reasoning and tallying results — by engaging in a qualitative study, which tests theories using language, but

[19] *See* Thomas G. Krattenmaker & Steven C. Salop, 96 YALE L.J. 209 (1986); Hovenkamp, *supra* n.9 at 38 ("If a market has economies of scale and firms have specialized assets, then strategic pricing even at prices significantly above cost can be anticompetitive. Post-Chicago scholars developed a fairly robust theory of 'raising rivals' costs,' under which dominant firms or cartels adopt strategies that impose higher costs on rivals, thus creating a price umbrella for the strategizing firms.").

[20] I included *Weyerhaeuser Co. v. Ross-Simons* in the population set because, though a predatory bidding case, the Supreme Court viewed the exclusionary claim as close enough to predatory pricing to apply the same legal standard, below-cost pricing and a dangerous probability of recoupment. 549 U.S. 312, 315, 127 S.Ct. 1069, 1072 (2007) ("We granted certiorari to decide whether the test we applied to claims of predatory pricing in *Brooke Group* [] also applies to claims of predatory bidding. We hold that it does."). I currently express no view on the wisdom of conflating predatory pricing and predatory bidding, except to note that the effect of the Court's decision will be to narrow predatory bidding claims.

[21] *See generally* Page, *supra* n.3 at 1296 ("Both [theory and law] involve generalizations based, in part, upon observation of events, and both involve predictions of future conduct.").

[22] For additional detail, *see* ANDY P. FIELD, DISCOVERING STATISTICS USING SPSS (3d ed. 2009).

which also customarily utilizes quantitative methodology. Plaintiffs' rate of success, as measured by whether the court upheld or dismissed the predatory pricing claim, constitutes the dependent variable. The independent variables respectively consist of decision-making factors derived from NPT and analysis of the actual effects of the predatory pricing scheme.

NPT constitutes the first independent variable. Three concepts derived from NPT — *rationality*, *competition*, and *efficiency* — conceptually justify the current predation test under U.S. antitrust law which requires plaintiffs to demonstrate below-cost pricing[23] and a dangerous probability of recoupment. Rationality further provides the intellectual support for the profit sacrifice test, another legal formulation occasionally used to detect predatory pricing, while competition and efficiency justify employing the market power concept to predation claims. Judges additionally have considered intent evidence, both objective and subjective, in evaluating predation claims, but NPT — and the concepts of rationality, competition, and efficiency — have reached only objective intent. Crucially, these various tools to detect predation accurately identify anticompetitive conduct if — but only if — monopolists behave rationally and maximize profits, competition punishes monopolists who fail in this endeavor, and society approves of the resource allocation achieved when monopolists price at cost. But legal tests based on costs, the probability of recoupment, profit sacrifice, objective intent, and market power fail to measure actual anticompetitive effects; instead, they assist judges in predicting whether a price decrease will harm consumers.

[23] Then Professor Frank Easterbrook warned against the perils — for law generally, and for antitrust law specifically — of crafting law without benchmarks. *See* Frank H. Easterbrook, *The Limits of Antitrust*, 63 TEX. L.R. 1, 3 (1984) ("In most cases even a perfectly informed court will have trouble deciding what the optimal long-run structure of the industry is, because there is no 'right' balance between cooperation and competition. The judge has no benchmark. Small wonder that the history of antitrust is filled with decisions that now seem blunders.").

Effects analysis, the second independent variable, represents a distinct mode of inquiry: It examines the actual consequences of the challenged conduct — whether competitors responded to lower prices by exiting the market, after which the monopolist raised prices long enough to recover any losses sustained. Effects analysis thus requires actual proof of — rather than relying on NPT to predict — consumer harm. If NPT accurately predicts competitive effects, then the two variables would coalesce, raising a multi-collinearity issue, but justifying the influence of NPT over predatory pricing law. After rendering judgment, however, courts do not verify the results predicted by NPT, which would take time and resources that courts lack, so empirical proof validating the accuracy of NPT in predation cases does not exist.[24] The purpose of the second independent variable is *not* to provide or challenge that missing empirical support but to test whether plaintiffs are more likely win cases in which appellate judges consider actual effects.

To aid in evaluating the evidence, I divide the results temporally to reflect the influence of three events critical to the development of U.S. predatory pricing law. In 1975, Phillip Areeda and Donald Turner published an article that established price theory as the conceptual foundation to predatory pricing law, arguing that liability should turn on whether the monopolist priced below marginal cost — or rather average variable cost because firms cannot calculate marginal costs.[25] Two U.S. Supreme Court judgments reflecting a skeptical view of the frequency and viability of predatory pricing — *Matsushita*[26] in 1986 and *Brook*

[24] *Compare* Eleanor M. Fox, *The Politics Of Law And Economics In Judicial Decision Making: Antitrust As A Window*, 61 N.Y.U. L. REV. 554, 584 (1986) ("In the context of antitrust law, the Easterbrook model suggests that prohibition of a transaction that does not lessen output necessarily protects inefficient firms from competition and thereby increases the cost of goods. But investigation reveals that the model implies these outcomes only because of assumptions, not empirical evidence."), *with* Page, *supra* n.3 at 1300 ("The acceptance of a theory by economists or by courts cannot await empirical proof, because full verification is impossible").

[25] Phillip Areeda & Donald F. Turner, *Predatory Pricing And Related Practices Under Section 2 of the Sherman Act*, 88 HARV. L. REV. 697 (1975); *see also* Kovacic, *supra* n.2 at 6 (discussing the impact of Areeda & Turner's article).

[26] *Matsushita Elec. Indus. Co., Ltd. v. Zenith Radio Corp.*, 475 U.S. 574, 106 S.Ct. 1348 (1986).

Group[27] in 1993 — mark the other two temporal dividers. In terms of coding, I labeled the cases as influenced by NPT if the opinion *considered* either cost analysis, recoupment, profit sacrifice, objective intent, or market power; to qualify, however, the case's holding need not have relied on a decision-making factor derived from NPT. Moreover, the population size, at 63 cases, is not large enough to permit a high degree of confidence concerning correlation, which usually requires at least 100 data points — given that, at less than 100 data points, minor differences significantly could skew results. But the cases constitute the population of data points, rather than just a sample, eliminating sampling error and thus permitting a greater degree of confidence as to correlation.

The results demonstrate that plaintiffs' probability of winning predatory pricing cases has fallen over time. Prior to Areeda & Turner's article, plaintiffs won 57% of predatory pricing cases; subsequently, they have won 23%. Plaintiffs' success rate after *Matsushita* also noticeably narrowed, from 33% to 20%. That success rate fell most dramatically after *Brooke Group* — from 33% to 7%. Because appellate judges employed NPT to formulate the legal test for predation, below-cost pricing and a dangerous probability of recoupment, these results at least partially reflect the influence of NPT over predatory pricing law. But the results do *not* support the hypothesis that plaintiffs' probability of winning cases improves when appellate judges consider the actual effects of predatory pricing because plaintiffs won only 16.7% of such cases compared to an overall success rate of 27%.

After attempting this empirical, positive analysis, the last third of the paper constitutes a more theoretical, normative inquiry focused on behavioral economics. To my knowledge, no

[27] *Brooke Group v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 113 S.Ct. 2578 (1993).

appellate predatory pricing decision explicitly has considered behavioral economic factors.[28] Whether any cases could have employed such factors is difficult to say because, having not recognized behavioral economics as a relevant decision-making factor, appellate judges have not benefitted from briefing on the issue. I argue that behavioral economics, principally bounded rationality and bounded self-interest, can supplement rationality theory and game theory to enhance the attractiveness of predation schemes to dominant firm managers, to whom the rationality principle also applies.

The article proceeds as follows. Part II examines the tenets of NPT relevant to predatory pricing law. Part III sets out the independent variables: First, I justify the selection of five proxies for NPT: analysis of costs, recoupment, profit sacrifice, objective intent, and market power. I then explain the relevance of the second independent variable, effects analysis. In Part IV, I discuss research results, and in Part V, behavioral economics; I conclude in Part VI.

II. Neoclassical Price Theory

Neoclassical Price Theory (NPT) dates back to Adam Smith and reflects faith in individual autonomy and the welfare-generating capacity of *self-interest*. Smith posited that, particularly in economic affairs, self-interest motivates human interaction, and that — directed into market mechanisms — individuals pursuing self-interest will promote societal welfare, primarily by generating wealth.[29] NPT also assumes that, in any particular market exchange — given complete knowledge of alternative options and given that individuals bear the full societal cost of each option (no externalities exist) — individuals know best how to advance their own welfare. Following from these assumptions, the prices of various goods

[28] *But cf. United States v. Dentsply Int'l, Inc.*, 399 F.3d 181, 190 (3d Cir. 2005) (Third Circuit determined that Dentsply's pricing practices supported finding of market power, particularly evidence that "Dentsply had a reputation for aggressive price increases in the market.").
[29] *See* STEVEN G. MEDEMA, THE HESITANT HAND, 18-19, 25 (2009).

reflect the relative production costs to society. If prices function properly, then buyers "will cast an informed vote" when purchasing goods, thereby ensuring the best combination of consumption choices available to society[30] — meaning that suppliers will respond to the votes cast by consumers and produce the most popular goods, thereby maximizing the utility of consumers.

Another principle tenet of NPT is rationality and its offspring, profit-maximization. NPT assumes that, when the market presents a choice, individuals actually will have perfect knowledge about how to decide — both concerning the ends desired and the least-cost means of achieving those ends: Individuals, therefore, have clearly defined preferences[31] and thus will choose the option that they prefer, the appropriate option or means that maximizes their utility[32] or happiness, which are ends motivated by self-interest.[33] On the demand-side, consumers face budget constraints, and NPT assumes that consumers accurately calculate the financial strictures of those constraints when purchasing goods.[34] On the supply-side, rationality translates into maximizing profits: In mixing labor and capital to produce products, and in deciding how much of a good to produce and at what cost, suppliers focus exclusively on maximizing profits; otherwise, competitors will drive them from the market.[35] The rationality principle converts individuals, either consumers or suppliers, in any particular situational model into abstractions that behave how "any" intelligent person would behave in

[30] *See* JAMES R. HACKNEY JR., UNDER COVER OF SCIENCE 113 (2007).
[31] *See* Colin Camerer et al., *Regulation for Conservatives: Behavioral Economics And The Case For "Asymmetric Paternalism*," 151 U. PA. L.R. 1211, 1214-1215 (2003).
[32] *See* ROGER E. BACKHOUSE, THE PUZZLE OF MODERN ECONOMICS 169 (2010).
[33] *See* Christopher R. Leslie, *Rationality Analysis in Antitrust*, 158 U. PA. L.R. 261, 266 (2010).
[34] *See* GEORGE J. STIGLER, THE THEORY OF PRICE 56 (3d ed. 1966).
[35] *See* Leslie, *supra* n.33 at 266.

that situation, stripping away psychological predilections, beliefs, values, tastes, and "the effect of social institutions".[36]

The theory of supply and demand constitutes another principal pillar of NPT. Prices act as the catalyst for the interaction between supply and demand. NPT generally assumes upward-sloping supply curves and downward-sloping demand curves — and importantly, equates price to consumer value or consumer utility, as measured by consumers' willingness to pay.[37] Higher prices signal to firms that consumers value goods (or services) more highly and that firms should produce more of that good, but because of the inverse relationship between price-charged and quantity-demanded, as prices go up, consumers will purchase less of the good. Firms will increase production until the marginal cost of producing the good equals the marginal revenue secured through sales, because if marginal revenue exceeds marginal cost, producing an additional unit will generate revenue above costs, while if marginal cost exceeds marginal revenue, producing an additional unit will cost more than the revenue generated.[38] Conversely, a falling price signals to firms that consumers value a good less highly and that firms should produce less of that good, but as price falls, consumers will purchase more of the good. Firms likewise will decrease production until marginal cost equals marginal revenue. And ultimately, "prices will adjust so as to make the demand for every good equal to the amount that suppliers want to sell, and the resulting allocation of resources will be efficient in the sense that any departure from it would make at least one person worse off."[39]

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[36] *See* Ioannis Lianos, *Judging Economists: Economic Expertise In Competition Litigation: A European View*, *in* TOWARDS AN OPTIMAL COMPETITION LAW SYSTEM 185, 215 (Ioannis Lianos & Ioannis Kokkoris eds., 2009).
[37] *See generally* Hackney, *supra* n.30 at 110; Page, *supra* n.3 at 1233 ("Consumers, for example, will not pay more than the value they assign to the product, and will substitute other products at higher prices.").
[38] *See* ROBERT S. PINDYCK & DANIEL L. RUBINFELD, MICROECONOMICS 284-85 (8th ed. 2012).
[39] *See* Backhouse, *supra* n.32 at 47.

NPT critically distinguishes between levels of efficiency achieved in perfect competition and monopoly. Perfect competition constitutes the paradigm, the societal objective, and that economic model hinges on three additional assumptions — price-taking, product homogeneity, and free entry and exit[40] — assumptions characteristic of, and that ensure, robust competition. If many firms operate in a market, each individual firm produces a relatively small percentage of market output and thus cannot influence the market price.[41] Such price-taking generally occurs in the absence of product differentiation, a state of competition in which firms produce nearly identical, homogeneous, or perfectly substitutable goods, and "no firm can raise the price of its product above the price of other firms without losing most or all of its business."[42] The third assumption, the absence of entry barriers, means that no special costs inhibit a new rival either from entering an industry and competing, or from exiting if profits prove allusive — all of which permits consumers to switch back and forth between suppliers.[43] In this highly idealized state of perfect competition, the demand curve facing each individual firm is flat, signifying that each firm cannot influence the market price: The marginal revenue of each additional sale consequently equals the price of the good sold. Each firm will produce an output where the market marginal cost curve intersects a flat marginal revenue curve, which equals the market price or demand curve facing the firm. Competition ensures that the lowest-cost provider supplies the market marginal cost curve.

By contrast, entry barriers and product differentiation eradicate competition in monopolistic markets, affecting the slope of the demand curve facing the monopolist: Rather

[40] Pindyck & Rubinfeld, *supra* n.38 at 280.
[41] *Id.*
[42] *Id.*
[43] *Id.* at 280-81.

than a flat demand curve, the monopolist now can control the price at which it sells the product and thus faces a downward sloping demand curve, the market demand curve.[44] To sell more goods, the monopolist must lower the price, but it must lower the price on all goods sold, so while it gains additional revenue from selling more items, it loses revenue from goods that could have been sold at the higher price. Marginal revenue thus no longer equals price, as in perfect competition, but is less than price, and so the monopolist's marginal revenue curve falls more steeply underneath the market demand curve. Although the monopolist also prices where marginal revenue equals marginal cost, because price no longer equals marginal revenue, at that output level the monopolist can charge a price greater than marginal cost. In perfect competition, moreover, suppliers would produce more output at that marginal cost.

The difference between the outcomes in perfect competition and monopoly defines the NPT concept of efficiency. In perfect competition, the price of the product represents not only the utility that consumers derive from — or value, as measured by consumers' willingness to pay, that consumers place on — the good, but the price also represents the cost to suppliers, the societal cost, to produce the good. In perfect competition, therefore, suppliers produce goods at the lowest cost to society, and all consumers who value the good at that cost and price can purchase the good. Monopoly yields inefficiency because the monopolist operates at a price above marginal cost. At that output level, allocative inefficiency results because a subset of consumers would have been willing to purchase the product at marginal cost but now must buy other products valued less highly. Moreover, the extra resources necessary to produce the extra output in perfect competition now go either to producing less-valued products or to rent-seeking — protecting monopoly profits by, for

[44] *See generally* Stigler, *supra* n.34 at 195.

example, investing in spare capacity or lobbying government to strengthen entry barriers. Additionally, at the monopoly output level, productive inefficiency results because firms produce at a price above marginal cost.[45]

The outcome in perfect competition, on the other hand, is Pareto efficient, in that society cannot reallocate resources and make anyone better off without making someone else worse off.[46]

> Pareto efficiency is a modest goal: It says that we should make all mutually beneficial exchanges, but it does not say which exchanges are best. Pareto efficiency can be a powerful concept, however. If a change will improve efficiency, it is in *everyone's* self-interest to support it.[47]

According to NPT, then, everyone can support the perfectly competitive equilibrium, which represents a position of maximum satisfaction for society,[48] reached by individuals and firms responding to price signals. Prices reduce the amount of information that individuals and firms must know to maximize utility and profits.[49] Smith believed that if society adopted appropriate legal rules and generally promoted competition, it would neutralize the abject excesses of self-interest,[50] not least by forcing firms to implement the most efficient technologies. Absent entry barriers and market power, high profits induce suppliers to compete for market share by producing new products or producing old products more

[45] *See generally* Pindyck & Rubinfeld, *supra* n.38 at 615, 625.
[46] *See* Backhouse, *supra* n.32 at 49. Given the difficulty of achieving Pareto-optimality, policy-makers generally prefer the Kaldor-Hicks efficiency standard, which considers an outcome efficient if those made better off *in theory* could compensate those made worse off, rendering the net outcome Pareto-optimal. The winners need not actually compensate the losers; the mere possibility is what counts for Kaldor-Hicks efficiency. *See* John Hicks, *The Foundations of Welfare Economics*, 49 ECONOMIC JOURNAL 696 (1939); Nicholas Kaldor, *Welfare Propositions in Economics and Interpersonal Comparisons of Utility*, 49 ECONOMIC JOURNAL 549 (1939).
[47] Pindyck & Rubinfeld, *supra* n.38 at 607 (emphasis in original).
[48] *See* Medema, *supra* n.29 at 55.
[49] *See* C. MANTZAVINOS, INDIVIDUALS, INSTITUTIONS, AND MARKETS 216 (2001).
[50] *See* Medema, *supra* n.29 at 21.

cheaply — the competition spurring innovation and maximizing both consumer and producer surplus.[51]

III. The Independent Variables

1. Neoclassical Price Theory

Appellate judges rarely have discussed the specific term "Neoclassical Price Theory" (NPT) when deciding predatory pricing cases. To demonstrate the influence of NPT over predatory pricing law and to test NPT's effect on the dependent variable — plaintiffs' probability of winning predatory pricing cases, below I will attempt to establish how appellate judges, when considering predation claims, have applied NPT through the following five decision-making factors: (1) analysis of the monopolist's costs, (2) consideration of the monopolist's probability of recoupment, (3) discussion of profit sacrifice by the monopolist, (4) examination of the monopolist's objective intent when lowering prices, meaning how the surrounding market circumstances might have influenced a decision to cut prices, and (5) analysis of the market power wielded by the monopolist. Note that the first two factors, costs and recoupment, together constitute the legal test for predation.

Legal Test for Predatory Pricing

a. Costs

The Supreme Court in *Brooke Group* stated that every plaintiff "seeking to establish competitive injury resulting from a rival's low prices must prove that the prices complained of are below an appropriate measure of [the] rival's costs."[52] The requirement pre-dates *Brooke Group*, however: Of sixty-three reported predatory pricing cases at the U.S. federal appellate level dating back to 1950, fully 56/63 considered the defendant's costs. Cost

[51] *See* Backhouse, *supra* n.32 at 58-59.
[52] *Brooke Group*, 509 U.S. at 222.

analysis embodies two fundamental tenets of Neoclassical Price Theory (NPT) — rationality and efficiency.

(i) Rationality

NPT posits that firms operate to maximize profits and that if firms fail to pursue this objective, competition will ensure their exit from the market. Pricing below cost is irrational: "A price below average variable cost, and for that matter, a price below average total cost, could not possibly be sustained in the long run since, to survive, firms must cover total costs in the long run."[53] "At a price less than average variable cost the firm is earning no return and could incur fewer losses by ceasing operations."[54] A profit-maximizing firm would have an incentive to sustain losses by pricing below cost only if "the promise of future monopoly gains made such a tactic profitable from a long-run perspective."[55] Reformulating the principle, the Fifth Circuit has stated that, at a price below Average Variable Cost (AVC),

> [T]he firm is suffering a loss on every unit of output it produces and sells, and its behavior is *rational* only if it hopes by engaging in this conduct to drive its competitors from the market and thereby gain monopoly powers that will enable it to charge a monopoly price in the future.[56]

[53] Paul L. Joskow & Alvin K. Klevorick, *A Framework for Analyzing Predatory Pricing Policy*, 89 YALE L.J. 213, 252 (1979); *see also* Case C-62/86 AKZO Chemie BV v. Commission of the European Communities, 1991 ECR I-03359, at Para. 72 ("Moreover, prices below average total costs, that is to say, fixed costs plus variable costs, but above average variable costs, must be regarded as abusive if they are determined as part of a plan for eliminating a competitor. Such prices can drive from the market undertakings which are perhaps as efficient as the dominant undertaking but which, because of their smaller financial resources, are incapable of withstanding the competition waged against them."); RICHARD A. POSNER, ANTITRUST LAW 216 (2d ed. 2001) ("Pricing below long-run marginal cost can be a tactic calculated to exclude an equally efficient competitor, since if the 'predator' were more efficient he could, and would (because it would cost him less), exclude his competitor by charging a price equal to or higher than his own long-run marginal costs.").

[54] Areeda & Turner, *supra* n.25 at 717.

[55] Joskow & Klevorick, *supra* n.53 at 252.

[56] *Adjusters Replace-A-Car v. Agency Rent-A-Car, Inc.*, 735 F.2d 884, 889 (5th Cir. 1984) (emphasis added); *see also Stearns Airport Equip. Co., Inc. v. FMC Corp.*, 170 F.3d 518 (5th Cir. 1999); *cf.* Case C-62/86 AKZO Chemie BV v. Commission of the European Communities, 1991 ECR I-03359, at Para. 71 ("Prices below average variable costs [] by means of which a dominant undertaking seeks to eliminate a competitor must be regarded as abusive. A dominant undertaking has no interest in applying such prices except that of eliminating competitors so as to enable it subsequently to raise its prices by taking advantage of its monopolistic position, since each sale generates a loss, namely the total amount of the fixed costs [] and, at least, part of the variable costs relating to the unit produced.").

Conversely, by pricing above AVC, firms act in "an economically rational manner," deriving an "immediate economic benefit from [] sales," and thus do not price illegally.[57]

Cost tests reflect a commitment to rationality as conceived by NPT in that, aside from a few exceptions such as introducing a product to market,[58] neither competitive firms nor monopolists generally have any profit maximizing reason to price below AVC unless engaged in predatory pricing; a rational firm not so engaged would cease operations rather than price below AVC. Cost tests thus embody NPT by demarcating the line between the rational and irrational, between legal and illegal pricing — whether a firm is maximizing profits or at least is minimizing losses.

(ii) Efficiency

Pricing at an appropriate measure of cost achieves the efficiency contemplated by NPT in perfect competition; pricing at cost constitutes the economic ideal for society, in that society cannot make anyone better off without making someone else worse off:

> [M]arket price reflects what consumers are willing to pay for the last unit of output; marginal cost reflects the full current cost of resources needed to produce it; a higher price would result in a reduction in output and thus deprive some buyers of a commodity for which they were willing to pay the cost of production.[59]

Though willing to consider predatory price cuts above marginal cost, the Ninth Circuit has acknowledged that marginal cost pricing promotes allocative efficiency: "[P]ricing [at marginal cost] enables resources to be properly allocated because the price accurately

[57] *Chillicothe Sand & Gravel Co. v. Martin Marietta Corp.*, 615 F.2d 427, 432 (7th Cir. 1980).
[58] *See, e.g.*, Valentine Korah, *The Paucity of Economic Analysis In The EEC Decisions On Competition — Tetra Pak II*, 46 CURRENT LEGAL PROBLEMS 148, 176-77 (1993) (other reasons for pricing below AVC include to tip a market when network effects exist or, in a recession, "if it would be more expensive to close [a] plant down and then restart it when demand increases") (cited in RICHARD WHISH & DAVID BAILEY, COMPETITION LAW 744 n.236 (7th ed. 2012); *see also* ALISON JONES & BRENDA SUFRIN, EU COMPETITION LAW *passim* (4th ed. 2011)).
[59] Areeda & Turner, *supra* n.16 at 702.

'signals' to the consumer the true social cost of the product."[60] Because marginal cost or AVC pricing embodies efficiency under NPT, U.S. law has refused to prohibit prices above that ideal as judges hesitate to create inimical incentives for monopolists: Normatively speaking, society wants monopolists to price at AVC, any price-cut in that direction constitutes a step towards a more efficient price, and the law should not make monopolists think twice about pricing more efficiently.

Monopolists, of course, do not operate under the constraints of perfect competition and generally price far above marginal cost:[61] Inelastic demand and product differentiation from barriers to entry create market power that permits monopolists to price up to the market demand curve above where marginal revenue equals marginal cost — which under NPT constitutes an inefficient price. Cost tests reflect a legal objective of efficiency — efficiency determined by NPT to exist at marginal cost — measured by examining the price level. The Second Circuit, quoting Areeda & Turner, has declared that monopolists may price down to marginal cost because at any price above that level — "only less efficient firms will suffer larger losses per unit of output."[62] "Marginal cost pricing," concluded the Second Circuit, "fosters competition on the basis of relative efficiency."[63]

Notwithstanding the existence of market power and thus the applicability of the monopoly model, U.S. predation law expects the market to operate *as if* it were perfectly competitive, in that competitors that lack the characteristics that make the monopolist dominant, such as scale economies, still must be able to price at the perfectly competitive level. The Seventh Circuit has declared that "rules requiring price floors higher than short-

[60] *See William Inglis & Sons Baking Co. v. ITT Continental Baking Co., Inc.*, 668 F.2d 1014, 1032 (9th Cir. 1981).
[61] Einer Elhauge, *Defining Better Monopolization Standards*, 56 STAN. L. REV. 253, 272-273 (2003).
[62] *Northeastern Tele. Co. v. Am. Tele. & Telegraph Co.*, 651 F.2d 76, 87 (2d Cir. 1981) (quoting Areeda & Turner, *supra* n.16 at 711); *see also Janich Bros., Inc. v. The Am. Distilling Co.*, 570 F.2d 848, 857 (9th Cir. 1977).
[63] *Northeastern Tele.*, 651 F.2d at 87.

run marginal cost will tend to preserve inefficient rivals or attract inefficient entry."[64] A marginal cost-based test — which, because of the difficulty of measuring marginal costs, means an AVC test[65] — thus reflects the pursuit of efficiency as conceived by the NPT model of perfect competition.

b. Recoupment

In addition to establishing pricing below an appropriate measure of cost, to win a predatory pricing suit, a plaintiff also must demonstrate a dangerous probability of recoupment. Recoupment means that the monopolist must recover, by supra-competitive pricing, the investment in below-cost pricing: "Recoupment is the ultimate object of an unlawful predatory pricing scheme; it is the means by which a predator profits from predation."[66] U.S. federal appellate judges regularly, though not comprehensively, have discussed recoupment throughout the period since 1950, specifically in twenty-seven of sixty-three reported predatory pricing cases. The doctrine of recoupment derives explanatory power from, and indeed exists because of, two principle tenets of Neoclassical Price Theory (NPT): competition and rationality.

(i) Competition

Efficiency, the objective of NPT, hinges on the presence of competition. When prices rise above the equilibrium level in perfectly competitive markets, existing rivals will expand production or potential rivals will enter those markets and produce the same product at a lower price or an innovative product that competes with the original — returning market

[64] *Martin Marietta*, 615 F.2d at 431; *see also* Areeda & Turner, *supra* n.25 at 711; *but see* Joskow & Klevorick, *supra* n.53 at 252-53 ("A price below *average total cost* could drive equally efficient and perhaps even more efficient rivals from the market or deter such firms from entering" (emphasis added)).
[65] Firms rarely have the means to calculate marginal cost accurately. But AVC is not identical to marginal cost: Richard Posner, for one, has pointed out how AVC could diverge significantly from short-run marginal cost. *See* Posner, *supra* n.1 at 942.
[66] *Brooke Group*, 509 U.S. at 224.

prices to equilibrium. Competition thus will preclude the anticompetitive effects of predatory pricing by preventing recoupment:

> Selling below cost [] to drive out a competitor is unprofitable even in the long run … The predator loses money during the period of predation and, if he tries to recoup it later by raising his price, new entrants will be attracted, the price will be bid down to the competitive level, and the attempt at recoupment will fail.[67]

The Third Circuit has acknowledged that, if competition exists, recoupment is "uncertain, since supra-competitive prices will attract new entrants (or returning competitors)."[68] The Second Circuit expressed an even deeper faith in market competition when it declared that monopoly "profits, *of course*, will invite new entry."[69]

In testing for recoupment, judges actually are examining which NPT model applies — whether the alleged monopolist operates alongside sufficiently weakened competition that rivals cannot expand production or enter the market, in which case the monopoly model more likely applies and recoupment is likely. Or whether, because of sufficiently robust competition, existing rivals or entrants will boost production in response to price increases and thereby prevent recoupment, in which case the market too closely resembles perfect competition.

Because the plaintiff generally will have already demonstrated that the alleged monopolist has significant market share, recoupment analysis often focuses on barriers to entry — whether entry probably will occur in time to negate recoupment.[70] Unless barriers to entry exist, several Circuits have assumed, following NPT, that competition will forestall recoupment:

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[67] Posner, *supra* n.1 at 927.
[68] *See Advo, Inc. v. Phila. Newspapers, Inc.*, 51 F.3d 1191, 1196 (3d Cir. 1995).
[69] *Northeastern Tele.*, 651 F.2d at 89 (emphasis added).
[70] *See generally* ROBERT O'DONOGHUE & A. JORGE PADILLA, THE LAW & ECONOMICS OF ARTICLE 82 EC 243 (2006).

> If it is easy to enter the circular distribution business, PNI's scheme is doomed to failure: any attempt to recoup by charging supra-competitive prices after it has gained a monopoly simply will attract new (or old) distributors who will undercut PNI and force prices back down to competitive levels.[71]

The Fifth Circuit has stated that "there must be evidence that the surviving monopolist could then raise prices to consumers long enough to recoup his costs without drawing new entrants to the market."[72] The Ninth Circuit similarly has dismissed a predatory pricing claim by holding that "the ease of entry into [the relevant market] and the number of potential participants on every level of it abundantly demonstrates that recoupment of the monopolist would never be possible."[73] Indeed, the absence of entry barriers, which enables potential competition, even pardons below-cost pricing: "[I]f there can be no 'later' in which recoupment could occur, then the consumer is an unambiguous beneficiary even if the current price is less than the cost of production."[74]

(ii) Rationality

If the absence of entry barriers or other market imperfections prevents recoupment, then according to NPT, predatory pricing is implausible because no rational, profit-maximizing monopolist would incur the losses that predatory pricing entails unless a reasonable probability of recoupment existed *ex ante*.[75] Absent that "reasonable expectation of recovering, in the form of later monopoly profits, more than the losses suffered," predatory pricing makes no economic sense.[76] Assuming a price below cost, evidence of recoupment explains the irrational — why a monopolist would "forgo profits that free competition would

[71] *Advo*, 51 F.3d at 1200.
[72] *Stearns Airport*, 170 F.3d at 529.
[73] *Vollrath Co. v. Sammi Corp.*, 9 F.3d 1455, 1461-62 (9th Cir. 1993).
[74] *A.A. Poultry Farms, Inc. v. Rose Acre Farms, Inc.*, 881 F.2d 1396, 1401 (7th Cir. 1989) (Easterbrook, J.).
[75] O'Donoghue & Padilla, *supra* n.70 at 243.
[76] *See Matsushita*, 475 U.S. at 588-89; *see also Weyerhaeuser Co. v. Ross-Simons*, 549 U.S. 312, 325, 127 S.Ct. 1069, 1078 (2007) (in context of predatory bidding).

offer [].”[77] Prior to *Brooke Group* reaching the Supreme Court, the Fourth Circuit dismissed the *Brooke Group* plaintiffs’ predatory pricing claim for failing to proffer “an economically rational basis” for recoupment, in that relying on an oligopoly to orchestrate recoupment is “economically irrational”.[78]

U.S. federal appellate courts thus will not sanction irrational pricing by a monopolist: To recover under the Sherman Act, the plaintiff must establish that the alleged predatory pricing scheme maximized monopoly profits; otherwise consumers benefit from monopolists pricing irrationally, below cost or below a profit-maximizing level. In this sense, because of NPT, irrational pricing constitutes a defense to predatory pricing claims.

Other Decision-Making Factors

The test for predatory pricing does not include the three decision-making factors discussed below — profit sacrifice, objective intent, and market power — which diminishes their relative importance: If a plaintiff establishes pricing below cost and a dangerous probability of recoupment, the monopolist’s intent matters not — though, of course, predation never occurs accidently.[79] Introducing the three variables further increases the complexity of the model: A monopolist, for example, will have greater difficulty recouping without market power, a fact that demonstrates overlap between decision-making factors, or multicollinearity.[80] Although multicollinearity may reduce the predictive accuracy of individual variables in a model, it does not affect the overall predictive accuracy of the sample data, taking the independent variables together. And because I currently am not

[77] *See Matsushita*, 475 U.S. at 588.
[78] *See Liggett Group, Inc. v. Brown & Williamson Tobacco Corp.*, 964 F.2d 335, 342 (4th Cir. 1992); *see generally infra* Part V.
[79] A specific intent always accompanies predatory pricing, whether documentary proof exists or not. *See infra* Part III(1)d.
[80] *See* Field, *supra* n.22 at 223-24. I am particularly grateful to Dr. Papp for this insight.

interested in how each individual variable representing NPT affected plaintiffs' probability of winning predation claims — but rather how NPT as such, which includes all independent variables, affected plaintiffs' probability of winning predation claims — the benefits of the three additional variables, notwithstanding the multicollinearity introduced, far outweigh the costs here. Moreover, all three additional proxies for NPT have appeared both regularly in the case law and *separately* from cost and recoupment analysis. In the paragraphs that follow, therefore, I will attempt to demonstrate that NPT sired the concepts of profit sacrifice, objective intent, and market power as well.

c. Profit Sacrifice

The doctrine of profit sacrifice constitutes another appropriate proxy for Neoclassical Price Theory (NPT). Profit sacrifice occurs when a monopolist deliberately sacrifices "present revenues for the purpose of driving [rivals] out of the market" and then recouping the losses through higher profits earned in the absence of competition.[81] Profit sacrifice has no legal significance unless considered jointly with the NPT concept of rationality; indeed, profit sacrifice is the converse of that concept. In perfectly competitive markets, suppliers must behave rationally and maximize profits or competitors will drive them from the market.[82] Assuming the existence of competition, predatory pricing liability initially hinges on the irrational — on profit sacrifice — because no rational profit-maximizing supplier would jeopardize survival unless the long-term effects of such a strategy yielded profits: "The profit sacrifice test assumes that a firm would not rationally engage in exclusionary

[81] *Martin Marietta*, 615 F.2d at 889; *see also D&S Redi-Mix v. Sierra Redi-Mix & Contracting Co.*, 692 F.2d 1245, 1249 (9th Cir. 1982).
[82] *See* Leslie, *supra* n.33 at 266.

conduct unless it considers that any short-term sacrifice of profits would be less than any expected [long-term] gains".[83]

U.S. federal appellate courts have conceptualized predatory pricing in terms of detecting irrationality and profit sacrifice. Of sixty-three reported predatory pricing cases since 1950, 21/63, or one-third, have discussed profit sacrifice. Following *Matsushita*, which held that a *conspiracy* to price predatorily made "no economic sense,"[84] the Fifth Circuit applied the "no economic sense" test — which encompasses a broader category of economic activity than profit sacrifice[85] — to a claim of unilateral predatory pricing: "Generally, a finding of exclusionary conduct requires some sign that the monopolist engaged in behavior that [] is economically irrational."[86] Conversely, rational, profit-maximizing pricing has constituted a defense to predatory pricing claims, as the profit-maximizing price generally occurs above AVC.[87] The Ninth Circuit has stated that, "Where the opportunity exists to increase or protect market share profitably by offering equivalent or superior performance at a lower price, even a virtual monopolist may do so."[88] Similarly, in dismissing a predatory pricing claim, the Seventh Circuit has said that, by selling above AVC, the defendant acted in "an economically rational manner, derived immediate economic benefit from its sales, and did not engage in the deliberate sacrifice of present revenues […]."[89]

Profit sacrifice can trigger antitrust liability generally, and predatory pricing liability specifically, only because judges have adopted the rationality tenet of NPT, which states that

[83] O'Donoghue & Padilla, *supra* n.70 at 185.
[84] *See Matsushita*, 475 U.S. at 587, 597.
[85] This is so because a dominant firm's activity may not sacrifice any short-term profit yet still make "no economic sense," given that the profits earned from the activity derive exclusively from anti-competitive effects. For a lucent and comprehensive discussion of the leading tests under Section 2, *see* U.S. Dep't of Justice, Competition and Monopoly: Single-Firm Conduct Under Section 2 of the Sherman Act 39 (2008).
[86] *Stearns Airport*, 170 F.3d at 523.
[87] But not an absolute defense, since an initial price below AVC followed by recoupment is rational.
[88] *Cal. Computer Prod. v. IBM*, 613 F.2d 727, 742 (9th Cir. 1979).
[89] *See Martin Marietta*, 615 F.2d at 432 (internal quotations omitted).

all firms, including monopolists, act to maximize profits, so if a monopolist fails to act as NPT predicts — by sacrificing profits — the risk of anticompetitive behavior rises. That greater risk justifies courts and competition authorities more closely examining the monopolist's behavior to discern precisely how it intends to recoup, because successful firms, which monopolists generally are, rarely sacrifice profits without hoping to recoup. If the sacrifice actually appears irrational, if recoupment looks unlikely, then NPT counsels against liability because consumers benefit from lower prices and competition will punish irrational conduct.

With predatory pricing, the close relationship between cost and profit sacrifice raises a question as to whether the profit sacrifice test is superfluous — whether it simply reflects pricing below an appropriate measure of cost — or whether profit sacrifice represents a distinct concept. The answer is: both. U.S. federal appellate courts have referred to profit sacrifice as equivalent to below-cost pricing while also acknowledging that profit sacrifice embodies a distinct phenomenon. The Seventh Circuit,[90] the Ninth Circuit,[91] and even the Supreme Court[92] all have spoken of profit sacrifice as defining the offense of predatory pricing,[93] isolating cost as the benchmark by which to measure profit sacrifice. Judge Easterbrook has articulated this view cogently: "If [] price is less than cost, then it may

[90] *Martin Marietta*, 615 F.2d at 432.
[91] *D&S Redi-Mix*, 692 F.2d at 1249 ("Pricing is predatory when a seller foregoes short-term profits in order to develop a market position from which it can later raise prices and recoup lost profits.").
[92] *Weyerhaeuser*, 549 U.S. at 323, 127 S.Ct. at 1077 ("Predatory pricing requires a firm to suffer certain losses in the short term on the chance of reaping supra-competitive profits in the future. A rational business will rarely make this sacrifice.").
[93] *See* Frank H. Easterbrook, *Predatory Strategies and Counterstrategies*, 48 U. CHI. L. REV. 263, 306 (1981) ("It may be hard to measure cost, and the sacrifice may turn out to be unprofitable, but at least there is a clearly defined phenomenon at work. The sacrifice is apparent, and it defines the offense."); *see also* Hovenkamp, *supra* n.9 at 152.

reflect a sacrifice in the hope of suppressing competition and collecting a monopoly profit later."[94]

But profit sacrifice can occur well above a firm's costs. The Ninth Circuit has recognized the potential for one form of profit sacrifice — limit pricing, "in which a monopolist sets prices above average total cost [ATC] but below the short-term profit-maximizing level so as to discourage new entrants and thereby maximize profits over the long run."[95] Another form of profit sacrifice can occur when a monopolist temporarily reduces price to a point above ATC but "below the profit-maximizing price whenever a new entrant appears ready to enter the market," to intimidate or deter the rival from entering.[96] The Seventh Circuit sharply has criticized condemning this species of profit sacrifice as "rob[bing] consumers of the benefits of [] price reductions by dominant firms facing new competition," and as further "freez[ing] the prices of dominant firms at their monopoly levels".[97]

Aside from the merits of curtailing profit sacrifice above ATC, the existence of the debate illustrates how profit sacrifice can constitute a concept separate from pricing below cost. Then-Judge Steven Breyer, writing on behalf of the First Circuit, also recognized profit sacrifice as a distinct concept, albeit one even more difficult to measure than pricing below-cost:

> But the general troubles surrounding proof of firm costs [] only hint at the difficulty of deciding whether or not a firm's price cut is profit-maximizing in the short-run, a determination that hinges not only on cost data, but also on elasticity of demand, competitors' responses to price shifts, and changes in unit costs with variations in production volume.[98]

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[94] *A.A. Poultry Farms*, 881 F.2d at 1400.
[95] *Transamerica Computer Co., Inc. v. IBM Corp.*, 698 F.2d 1377, 1387 (9th Cir. 1983).
[96] *Id.*
[97] *MCI Commc'n Corp. v. AT&T Co.*, 708 F.2d 1081, 1114 (7th Cir. 1983).
[98] *Barry Wright Corp. v. ITT Grinnell Corp.*, 724 F.2d 227, 235 (1st Cir. 1983) (Breyer, J.).

So "profit sacrifice" refers both to below-cost pricing, one-half of the legal test for predatory pricing, and to failing to maximize profits, a separate concept — the joint usage confusing the purpose of the test and the requirements of establishing profit sacrifice. Either version of profit sacrifice helps identify predation only because NPT posits that firms normally operate to maximize profits.

d. Intent

In 26/63 reported federal appellate cases, the opinion mentioned whether the monopolist intended to lower prices below remunerative levels only to recover supra-competitive profits subsequently; twelve cases discussed objective intent evidence, while the remaining fourteen discussed subjective intent evidence, not always favorably. All appellate courts but the Seventh and Eighth Circuits find evidence of intent relevant,[99] without drawing a clear distinction between objective and subjective intent, and the Second Circuit, which fully has adopted the Areeda & Turner AVC test, considers it "crucial" when evaluating predatory pricing claims: "The crucial question is whether appellants specifically intended to vanquish their opposition by unfair or unreasonable means."[100] The Sixth Circuit has stated that "motive or intent is the distinguishing characteristic of predatory pricing."[101]

Evidence of intent cannot demonstrate actual competitive effects or establish recoupment; rather, intent evidence, similar to the Neoclassical Price Theory (NPT) proxies above, assists judges in predicting competitive effects. Again, the NPT paradigm is profit-maximization, so when firms irrationally price below cost, intent evidence can help explain why. *Subjective intent* evidence consists of documents and correspondence generated by the monopolist explaining its state of mind — why the monopolist decided to lower prices. NPT posits that

[99] *See A.A. Poultry Farms*, 881 F.2d at 1401-2; *Morgan v. Ponder*, 892 F.2d 1355, 1359 (8th Cir. 1989).
[100] *Northeastern Tele.*, 651 F.2d at 85.
[101] *Arthur S. Langenderfer, Inc. v. SE Johnson Co.*, 729 F.2d 1050, 1057 (6th Cir. 1984).

firms have perfect knowledge and choose appropriate means to maximize profits, that firms act rationally, so if a firm intends to price predatorily, that decision should raise the probability of recoupment occurring. No monopolist accidentally recoups; in the absence of purposeful conduct, whether or not established by documentary evidence, recoupment, and thus predatory pricing, cannot occur. However, the predation cases that consider subjective intent evidence do not reason from NPT premises, perhaps because subjective intent constitutes an important decision-making factor in other, non-economic, areas of the law, such as criminal law. So I do not include subjective intent as a relevant NPT factor.

Objective intent evidence also attempts to explain why the monopolist lowered prices, but it consists of surrounding market circumstances rather than justifications articulated by the monopolist, and derives explanatory power from NPT premises, so objective intent constitutes an appropriate proxy for NPT. Whether the monopolist sacrifices profits by lowering prices, or whether market entry or rival expansion immediately precedes the monopolist's decision to lower prices — both qualify as inquiries into objective intent. Evidence of objective intent also raises the probability of recoupment occurring, since it explains otherwise ambivalent or irrational pricing decisions, converting them into a profit-maximizing scheme to recoup within the NPT framework. As mentioned above, the delineation between decision-making factors that approximate NPT can break down, as appellate courts have inferred intent to price predatorily both from below-cost pricing[102] and from the existence of barriers to entry.[103]

[102] *See McGahee v. Northern Propane Gas Co.*, 858 F.2d 1487, 1503-4 (11th Cir. 1988).
[103] *See Spirit Airlines, Inc. v. Northwest Airlines, Inc.*, 431 F.3d 917, 946 (6th Cir. 2005).

e. Market Power

Market power or monopoly power refers to the ability of "a single firm or group of firms to price profitably above marginal cost".[104] More specifically, a firm or group of firms exercise market power if existing or potential equally efficient competitors cannot constrain price increases above the dominant firm's marginal cost by expanding within, or entering, the relevant market.[105] Dominant firms generally can exercise market power by 1 of 2 methods: Either "the firm or group of firms may raise or maintain price above the competitive level directly by restraining its own output."[106] Or "the firm or group of firms may raise price above the competitive level or prevent it from falling to a lower competitive level by raising its rivals' costs and thereby causing them to restrain their output."[107]

For purposes of analyzing predatory pricing, only the first method of exercising market power is generally relevant, since predation initially involves lower output prices rather than higher input prices,[108] though a vertically integrated monopolist might combine the two strategies to raise the probability of recoupment by engaging in a price squeeze, for instance. Factors relevant to determining this classical form of market power[109] include the market share of the monopolist, whether significant entry barriers exist, "the number and size distribution of firms already in the market, the stability of market shares over time, and historical evidence on the profits earned by the dominant firm."[110] U.S. federal appellate

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[104] *See* Thomas G. Krattenmaker, Robert H. Lande, Steven C. Salop, *Monopoly Power & Market Power in Antitrust Law*, 76 GEO. L.J. 241, 247 (1987).
[105] *See generally id*. at 249.
[106] *Id*.
[107] *Id*.
[108] *But cf. id.* at 255 ("The evaluation of Bainian market power is not merely the first step of the inquiry; it is the primary focus of the entire analysis … It is the exclusionary conduct that creates the market power being evaluated, not the other way around.").
[109] Krattenmaker, Lande, & Salop refer to classical market power as "Stiglerian market power". *See id.*
[110] Joskow & Klevorick, *supra* n.53 at 226.

courts have considered market power in eighteen of the sixty-three reported predatory pricing cases since 1950.

The concept of market power, at least in the classical sense relevant to predatory pricing, follows from the Neoclassical Price Theory (NPT) principle of competition, in that market power inhibits competition, enables monopoly pricing — or pricing above marginal cost, and yields inefficiency. The existence of market power ensures that the model of perfect competition does not apply: Products are not homogenous but differentiated — consumers will not readily substitute to other products if the dominant firm raises price above marginal cost; barriers to entry or expansion exist; and the dominant firm profitably can charge a price above marginal cost without losing customers. Greater competition would force the monopolist to lower price and thus operate at a lower productive cost to society. At that lower cost, additional consumers would be willing to purchase the monopolist's product rather than an inferior substitute.

Market power thus signifies the greater applicability of the monopoly paradigm and significantly increases the probability that predatory pricing will succeed — that the dominant firm will recoup. Indeed, market power constitutes a prerequisite to recoupment and a prerequisite to successful predation — the preeminent factor in predicting whether lower prices today foreshadow monopoly prices tomorrow. Without market power, the competitive price will prevail, as any attempt to charge supra-competitive prices induces rivals or entrants to expand output, rendering recoupment futile.[111] Judge Richard Posner, writing for the Seventh Circuit, acknowledged the symbiotic relationship between market power and recoupment, dismissing a predatory pricing claim because defendant's lack of market power precluded recoupment:

[111] *See Am. Academic Suppliers, Inc. v. Beckley-Cardy Inc.*, 922 F.2d 1317, 1319 (7th Cir. 1991) (Posner, J.).

> How could [defendant have recouped], facing, as it would have been, hundreds of competitors? It has no patents, no vast reserves of capital, no trade secrets, no trademarks, no deep reservoir of customer goodwill (its purchasers are institutions, not individuals), no other durable competitive advantages that would enable it to raise prices without fear that its competitors by failing to follow suit would make the price increase impossible to maintain.[112]

In *Atl. Richfield*, through which the Supreme Court eventually applied the antitrust injury doctrine to monopolization claims,[113] the Ninth Circuit dismissed a predatory pricing claim because, "Although there is a genuine issue regarding market share and entry barriers, there appears to be no genuine issue regarding the ability of [defendant's] existing competitors to increase their output."[114] And in the most recent reported predatory pricing case at the federal appellate level, the Sixth Circuit, finding that Northwest Airlines "possessed overwhelming market share, and [that] barriers to entry were very high,"[115] held that "Northwest had the requisite *market power* to render its predatory pricing plausible and successful."[116] Discussion of market power demonstrates the influence of NPT over predatory pricing law.

f. Conclusion

If costs, recoupment, profit sacrifice, objective intent, and market power accurately depict the influence of NPT on predatory pricing law and therefore constitute appropriate proxies for NPT, then that influence is nearly absolute: Of sixty-three reported predatory pricing cases since 1950, fifty-six, or 89%, have discussed costs. 59/63 — or roughly 94% — have

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[112] *Id*. at 1321.
[113] The Supreme Court originally crafted the antitrust injury doctrine for mergers in *Brunswick Corp. v. Pueblo Bowl-O-Mat, Inc.*, 429 U.S. 477, 489, 97 S.Ct. 690, 697 (Marshall, J.) ("We therefore hold that [for] the plaintiffs to recover treble damages on account of [Section] 7 violations, they must prove more than injury causally linked to an illegal presence in the market. Plaintiffs must prove antitrust injury, which is to say injury of the type the antitrust laws were intended to prevent and that flows from that which makes defendants' acts unlawful.").
[114] *Rebel Oil Co., Inc. v. Atl. Richfield Co.*, 51 F.3d 1421, 1443 (9th Cir. 1995).
[115] *Spirit Airlines*, 431 F.3d at 931.
[116] *Id*. at 936.

discussed either costs or recoupment or both. Fully sixty cases, or over 95%, have discussed costs, recoupment, or profit sacrifice. And *sixty-one* of sixty-three reported predatory pricing cases — or roughly 97% — have discussed costs, recoupment, profit sacrifice, objective intent, or market power.[117]

2. Effects

Analysis of the actual effects of predatory pricing on consumer welfare constitutes the second independent variable. Neoclassical Price Theory (NPT) attempts to predict the effects of predatory pricing — whether price cuts eventually will lead to supra-competitive pricing — while assuming that firms maximize profits and assuming that, absent significant entry barriers, competition will prevent the maintenance of supra-competitive profits, thus ensuring market efficiency. NPT has proved administratively useful to appellate judges because the offense of predatory pricing occurs sequentially over time: The monopolist first lowers price; lower prices secondly harm competitors; then the monopolist thirdly raises prices to supra-competitive levels to recover the investment in lower prices and to earn additional profits — which harms consumers.

The timing and sequence of predatory pricing separates the offense from other exclusionary pricing practices, while raising widespread skepticism that any initial investment and short-term consumer benefit actually will convert to recoupment and medium-term consumer harm. The U.S. Supreme Court once expressed an even more radical view, preferring any and all short-term price-cuts *even if* they fleetingly disappear and merely introduce supra-competitive prices:

[117] The First Circuit jointly has considered the defendant's market power and the absence of anticompetitive effects — without discussing the defendant's costs, profit sacrifice, or the probability of recoupment — in dismissing a predatory pricing claim. *See Springfield Terminal Railway v. Canadian Pac*., 133 F.3d 103 (1st Cir. 1997).

> Even if the ultimate effect of the cut is to induce or reestablish supra-competitive pricing, discouraging a price cut and forcing firms to maintain supra-competitive prices, thus depriving consumers of the benefits of lower prices in the interim, does not constitute sound antitrust policy.[118]

If read literally, such reasoning would eliminate the claim of predation, which the Supreme Court did not intend. As discussed more fully below,[119] however, the loose language here, reflecting a severe short-term bias in evaluating consumer welfare, has seared into the minds of circuit court judges[120] an unwillingness to consider predation claims closely, regardless of the theory employed, whether based on economics or psychology. NPT does not mandate such extreme skepticism towards predatory pricing, and indeed, by empowering courts to predict competitive effects, actually has enhanced the viability of predation claims by permitting evaluation prior to the last stage of the offense — prior to when consumer harm actually occurs. Assuming a reasonable degree of accuracy, providing judges with the ability to predict competitive effects is a significant attribute of NPT.

Analysis of effects, on the other hand, entails examining actual efficiency losses or actual harm to consumers — whether the monopolist in fact raised prices to supra-competitive levels and recouped the investment in below-cost prices. Advocates of NPT might respond that cost tests do attempt to measure pricing efficiency rather than attempting to predict it. And indeed, cost tests measure *static* efficiency at a particular point in time, which might prove dispositive if the offense of predatory pricing did not occur sequentially over time: The risk to consumer welfare that predatory pricing poses is not the current price that cost tests measure, but a subsequent, higher price — the wealth transfer effects and inefficiency of

[118] *Brooke Group*, 509 U.S. at 224, 113 S.Ct. at 2588.
[119] *See infra* Part IV.
[120] And plaintiffs' counsel, who must invest significant resources to bring predation claims, assuredly have refrained from doing so given that the Supreme Court's most recent swing-voter, on behalf of the Court, expressed such disbelief that predation can harm consumers. *But cf. Nat'l Fed'n of Indep. Bus. et al. v. Sebelius*, 567 U.S. __ (2012) (Chief Justice Roberts cast the deciding vote to uphold the Obama administration's healthcare law).

which outweigh any short-term consumer gain. In that sense, cost tests account for one relevant data point along a *dynamic* line of data points. But cost tests still attempt to predict competitive effects by providing a benchmark below which the risk of predatory pricing significantly increases. Once breached, judges then consider objective intent, market power, and the probability of recoupment to predict the likely effects of currently low prices.

The purpose of effects analysis, the second independent variable, in this paper is to determine which factors courts more closely examine when deciding predatory pricing cases — factors derived from NPT that attempt to predict effects, or the actual competitive effects of the challenged practice. Another purpose of the second independent variable is to determine how plaintiffs fare when courts focus on effects to resolve predatory pricing claims rather than decision-making factors derived from NPT. The hypothesis here predicts that plaintiffs' rate of success in predatory pricing cases increases when courts examine — rather than exclusively employ NPT to predict — actual effects.

Consequences matter. Scholars[121] have debated exactly what antitrust law should aim to pursue, from allocative efficiency to minimizing wealth transfers from producers to consumers.[122] But even Chicago School scholars, the most ardent advocates of applying NPT to competition law rules,[123] have argued that liability should turn on the effects of challenged practices. Judge Posner has recommended evaluating competition by its

[121] A debate continues within the antitrust community as to whether different schools of thought actually exist. *Compare, e.g.*, Hovenkamp, *supra* n.9 at 31 ("The principal antitrust ideologies are the Chicago and Harvard Schools and the 'post-Chicago' alternative."), *and* Kovacic, *supra* n.2 at 14 ("[T]he intellectual DNA of modern U.S. antitrust doctrine is chiefly a double helix that consists of two intertwined chains of ideas, one drawn from the Chicago School of Robert Bork, Richard Posner, and Frank Easterbrook, and the other drawn from the Harvard School of Phillip Areeda, Donald Turner, and Stephen Breyer."), *with* Posner, *supra* n.1 at 925 ("The general conclusion of the paper is that it is no longer worth talking about different schools of academic antitrust analysis.").

[122] *Compare* ROBERT H. BORK, THE ANTITRUST PARADOX (2d ed. 1993), *with* Robert H. Lande, *Wealth Transfers as the Original and Primary Concern of Antitrust: The Efficiency Interpretation Challenged*, 50 HASTINGS L.J. 871 (1999).

[123] *See, e.g.*, Posner, *supra* n.1 at 932 ("The Chicago school has largely prevailed with respect to its basic point: that the proper lens for viewing antitrust problems is price theory.").

consequences — specifically, "whether the restriction caused the firm's output to rise or fall."[124] The neo-Chicago approach "accepts the Chicago tenet that legal rules can and should be assessed on their consequences in terms of efficiency."[125] Harvard School scholars similarly have crafted legal rules focused on evaluating exclusionary effect in terms of efficiency.[126]

In the predatory pricing context, an effects-based approach would consider whether the purportedly anticompetitive prices terminally weakened or drove rivals from the market, how efficiently rivals operate, the health of other competitors post-predation, and whether recoupment actually occurs — whether the dominant firm raises prices after weakening or eliminating rivals. In essence, an effects-based approach involves a rule of reason-type analysis of market conditions centered on the presence or absence of recoupment. The Supreme Court, at least, always has found such evidence compelling in predatory pricing cases, even in cases that feature legal reasoning derived from NPT.[127] Consider again *Matsushita*: Despite an opinion that discussed profit sacrifice and the "no economic sense" test, the Court's holding turned on the fact that, despite a predatory pricing scheme that already had lasted *twenty years*, plaintiffs could not establish anticompetitive effects or

[124] *See* Richard A. Posner, *The Next Step in the Antitrust Treatment of Restricted Distribution: Per Se Legality*, 48 U. Chi. L. Rev. 6, 21 (1981).
[125] *See* Evans & Padilla, *supra* n.10 at 75.
[126] *See* Elhauge, *supra* n.61 at 330. Professor Elhauge and Professor Wickelgren also have argued, mathematically, that bundled discounts above cost can exclude as-efficient competitors. *See* Einer Elhauge & Abraham L. Wickelgren, *Robust Exclusion Through Loyalty Discounts With Buyer Commitment* (John M. Olin Ctr. For Law, Economics, And Business, Discussion Paper No. 722, Aug. 2012); Einer Elhauge & Abraham L. Wickelgren, *Anti-Competitive Exclusion And Market Division Through Loyalty Discounts* (Univ. of Texas Law & Economics Research Paper No. 216, Oct. 2011).
[127] Professor William Page has taken a different view, arguing that the Supreme Court decided *Matsushita* based on a model derived from NPT. *See* Page, *supra* n.3 at 1287 ("In *Matsushita*, in particular, the Court approved the grant of summary judgment because the alleged practice — collusive predatory pricing — was implausible according to the terms of the models").

recoupment:[128] "Two decades after their conspiracy is alleged to have commenced, petitioners appear to be far from achieving [recoupment]: the two largest shares of the retail market in television sets are held by RCA and respondent Zenith, not by any of petitioners."[129]

Moreover, a dispute over the effects of predation, whether recoupment actually occurred — rather than the pure application of NPT — arguably drove the holding in *Brooke Group*. Plaintiffs asserted that the predatory pricing scheme succeeded by narrowing the price gap between higher-priced branded cigarettes and lower-priced generic cigarettes, "from approximately 38% at the time Brown & Williamson entered the segment to approximately 27% at the time of trial."[130] Yet the Court calculated that the increasing market share of generic cigarettes ensured that sufficient competition existed, precluding recoupment from below-cost pricing:[131] "Following Brown & Williamson's entry, the rate at which generic cigarettes were capturing market share did not slow; indeed, the average rate of growth doubled."[132] Five years after the alleged predation commenced, "the generic segment expanded from 4% to more than 15% of the domestic cigarette market, or greater than 2% per year."[133]

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[128] Professor Christopher Leslie has argued that courts should evaluate predation schemes *ex ante*, at the time of their implementation. *See, e.g.*, Leslie, *supra* n.33 at 313 ("Yet the Court knew at the time of the litigation that the conspiracy had failed to achieve its goals after twenty years, which colored the Court's view of the inevitability of that failure and consequently the implausibility of the conspiracy from the outset."). Yet to ignore evidence that recoupment did *not* occur and still impose liability arguably constitutes deontological reasoning in another guise, an error of the sort committed by the Tenth Circuit in *AMR. Corp.* Ignoring such evidence additionally would sideline the most critical indicator of successful predation and thus anticompetitive effects and consumer harm: recoupment.

[129] *Matsushita*, 475 U.S. at 591.

[130] *See Brooke Group*, 509 U.S. at 218.

[131] *But see* Leslie, *supra* n.33 at 271 ("Liggett argued that [Brown] did not intend to recoup its investment in the market segment where the predatory pricing actually occurred — generic cigarettes — but rather through oligopoly pricing in the branded-cigarette market, which would experience a price hike after a properly punished Liggett raised its prices for generic cigarettes.").

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

[133] *Id*. at 234.

Cases also exist, however, where NPT appeared to dictate the outcome, outweighing evidence of anticompetitive effect. In *U.S. v. AMR Corp.*,[134] for instance, the Tenth Circuit dismissed a predatory pricing claim because the Justice Department failed to establish that American Airlines priced below an "appropriate" measure of cost.[135] In fact, the Justice Department proffered evidence that American was pricing below four measures of cost, two measures based on average total cost (ATC) and two representative of profit sacrifice. Because the opinion wholly turned on which cost measure most accurately identifies predation, if at all, how the U.S. Supreme Court previously had addressed various cost measures presumably should have dictated the result — presumably, but no.

Consider first *Matsushita*. After noting that the predation alleged involved a *conspiracy* and thus implicated Sect. 1 of the Sherman Act rather than Sect. 2, the Supreme Court refused to "resolve the debate" concerning which cost measure lower courts should apply, instead sketching two broad guidelines for detecting predation: (1) "pricing below the level necessary to sell their products," which essentially means pricing below the level the market would bear — or engaging in profit sacrifice; or (2) "pricing below some appropriate measure of cost".[136] To dispel the notion that, by appropriate measure of cost, the Court exclusively meant average variable cost (AVC) or average incremental cost (AIC), the Court explicitly stated: "We do not consider whether recovery should ever be available on a theory such as respondents' when the pricing in question is above some measure of incremental cost."[137] Later that same year, the Supreme Court reiterated its agnosticism both towards

[134] For another example, in the context of resale price maintenance, *see Leegin Creative Leather Prod. v. PSKS, Inc.*, 551 U.S. 877, 929, 127 S.Ct. 2705, 2737 (2007) (Breyer, J., dissenting) ("The only safe predictions to make about today's decision are that it will likely raise the price of goods at retail").
[135] 335 F.3d 1109, 1120 (10th Cir. 2003).
[136] *See Matsushita*, 475 U.S. at 584 n.8, 106 S.Ct. at 1355 n.8.
[137] *Id*. at 585 n.9, 1355 n.9.

designating one cost measure above others and even towards recognizing predation above any particular cost measure: "Thus, [here], as in *Matsushita*, we find it unnecessary to consider whether recovery should ever be available … when the pricing in question is above some measure of incremental cost, or whether above-cost pricing coupled with predatory intent is ever sufficient to state a claim of predation."[138]

Now recall *Brooke Group*, which acknowledged that predation requires pricing below an "appropriate" measure of cost — but "[b]ecause the parties [] agree[] that the relevant measure of cost [here] is average variable cost, [the Court] again declines to resolve the conflict among the lower courts over the appropriate measure of cost."[139] The Court further explained that:

> Although *Cargill* and *Matsushita* reserved as a formal matter the question whether recovery should ever be available … when the pricing in question is above some measure of incremental cost, the reasoning in both opinions suggests that only below-cost prices should suffice, and we have rejected elsewhere the notion that above-cost prices that are below general market levels or the costs of a firm's competitors inflict injury to competition cognizable under the antitrust laws.[140]

Given the Court's prior comments about retaining the "appropriate" measure of cost framework and about refusing to resolve precisely what that measure constitutes, a reasonable reading of the Court's comments here simply reflects further support for the "appropriate" cost standard, in that the appropriate measure might coincide with or even exceed incremental cost — including a portion of, or all, fixed costs. By contrast, the Court explicitly narrowed *Matsushita* and *Cargill* by stating that predation requires pricing below *some* measure of cost, given that *Matsushita* contemplated a predation doctrine

[138] *Cargill, Inc. v. Monfort of Colorado, Inc.*, 479 U.S. 104, 117 n.12, 107 S.Ct. 484, 493 n.12 (1986).
[139] *Brooke Group*, 509 U.S. at 222 n.1, 113 S.Ct. at 2587 n.1 (internal quotations omitted).
[140] *Id*. at 223, 2588 (internal quotations and citations omitted).

encompassing profit sacrifice unmoored to a particular cost measure,[141] and given that *Cargill* refused to eliminate the possibility of predation occurring above cost.[142] In all events, even if the Court in this passage was attempting to insinuate that predation required pricing below incremental cost — which would entail non-sensically conflating "incremental cost" and "cost" — that attempt would amount to *dicta* that fails to bind lower appellate courts because the applicable prices in *Brooke Group* were below AVC.

Return to the Tenth Circuit's reasoning in *AMR Corp*. The Court initially rehearsed the standard refrain that "[d]espite a great deal of debate on the subject, no consensus has emerged as to what the most appropriate measure of cost is in predatory pricing cases."[143] "In this circuit," the Court continued, "we have spoken of both average variable cost and other marginal cost measures as relevant"[144] — a selection well within the Tenth Circuit's discretion given Supreme Court precedent.[145] As to why, the Tenth Circuit stated that "[s]ole reliance on AVC as the appropriate measure of cost may obscure the nature of a particular predatory scheme".[146] Of the four cost measures proffered by the Department of Justice, the Tenth Circuit rejected two as too closely resembling profit sacrifice tests, which, according to the Tenth Circuit, "involve a great deal of speculation and often result in injury to the consumer and a chilling of competition."[147] In rejecting the profit sacrifice measures,[148] the

[141] *See supra* n.135.
[142] *See supra* n.136.
[143] *See AMR Corp*., 335 F.3d at 1115; *id*. at 1116 ("The Supreme Court has declined to state which of the various cost measures is definitive.").
[144] *Id*. at 1116.
[145] The Tenth Circuit favors incremental cost because "as long as a firm's prices exceed [marginal cost], each additional sale decreases losses or increases profits". *See id*. at 1115-16 (internal quotations omitted).
[146] *Id*. at 1116.
[147] *See id*. at 1118; *see generally* Einer Elhauge, *Why Above Cost Price Cuts to Drive Out Entrants Are Not Predatory — And The Implications for Defining Costs and Market Power*, 112 YALE L.J. 681, 694 (2003).
[148] One of these profit sacrifice measures compared "incremental revenue to a measure of both average variable cost and average avoidable cost [AAC]." Average avoidable cost represents the expenses that a dominant undertaking could have avoided by not producing a particular range of output and can include both fixed and sunk costs. *See* DG

Tenth Circuit followed the Supreme Court's reasoning in *Brooke Group* that demanded pricing below-cost even if profit sacrifice otherwise occurred.

The Tenth Circuit held the other two cost measures "invalid as a matter of law" because they incorporated "a significant amount of American's fixed costs".[149] While Tenth Circuit precedent may have permitted that conclusion, Supreme Court precedent certainly did not mandate it, as the Tenth Circuit repeatedly claimed. *Brooke Group* never stated that, to establish predation, plaintiffs must prove prices below only variable or incremental cost, so the Tenth Circuit could not accurately state that "utilizing the[] cost measures [in Tests Two and Three] would be [] equivalent [to] applying an average total cost test, implicitly ruled out by Brooke Group's mention of incremental costs only."[150] The Tenth Circuit further mistakenly stated that "Tests Two and Three are inappropriate measures of incremental cost under *Brooke Group*, as they cannot demonstrate that American priced below an appropriate measure of cost."[151] While *Brooke Group* mentioned "incremental costs," it did so only to reiterate the open question whether predation could occur above that level, ruling out only prices above cost.[152] Most explicitly, the fact that Tests Two and Three included fixed costs could not have rendered them inappropriate predation measures because *Brooke Group* had "decline[d] to resolve the conflict among the lower courts over the appropriate measure of

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Competition Discussion Paper on the Application of Article 82 of the Treaty to Exclusionary Abuses (Brussels, December 2005) at Para. 108. The Tenth Circuit strangely rejected this test as not measuring "only the avoidable or incremental cost of the capacity additions". *See AMR Corp*., 335 F.3d at 1120. An AAC test demonstrates that even incremental cost can include an apportionment of fixed or sunk costs; the blurring of fixed and variable costs is probably what disturbed the Tenth Circuit here.

[149] *See AMR Corp*., 335 F.3d at 1118 n.10.

[150] *Id*. at 1117.

[151] *Id*. at 1118 n.10.

[152] *See supra* n.138.

cost".[153] As a matter of U.S. Supreme Court precedent, therefore, predation *can* occur at prices above AVC or incremental cost, if below ATC.

As a matter of NPT, pricing below long-run average total cost (LRATC), long-run average marginal cost (LRAMC), or long-run average avoidable cost (LRAAC) also enables predation. Unless sudden shifts in demand or supply force prices below the two cost measures, monopolists otherwise have no profit-maximizing reason except exclusion to price below-cost and incur losses since they can eliminate less-efficient competitors with price-cuts above cost. While equally or more-efficient competitors generally can match such cuts, they may be incapable of doing so if having entered the market only recently. When a monopolist prices below LRATC, LRAMC, or LRAAC, therefore — which all include at least a portion of fixed or sunk costs — the prospect of predation arises.[154]

Despite recognizing earlier in the opinion that generally no single cost measure represented "the most appropriate measure of cost,"[155] and particularly that AVC did not deserve that designation, the Tenth Circuit rejected all four cost measures proffered by the Justice Department as inappropriate and thus dismissed the suit "[b]ecause it is uncontested that American did not price below AVC for any route as a whole."[156] Evidence existed, however, that American willingly had sacrificed profits by lowering prices: "By increasing capacity, American overrode its own internal capacity-planning models for each route, which

[153] *See supra* n.121. In fairness to the Tenth Circuit, the Justice Department did not vigorously defend Test Two and Test Three on appeal. Yet the Tenth Circuit oddly found persuasive a position taken by the Justice Department under William Baxter over twenty years prior to the decision. *See AMR Corp*., 335 F.3d at 1117 n.9 ("Notably, the government has previously taken the position that utilizing fully allocated costs as a pricing standard would result in 'stultification of competition' and should be rejected as 'contrary to the public interest'."). I say "oddly" because agencies need not hold consistent positions over time and over several administrations.

[154] Posner, *supra* n.53 at 220 ("But when pricing below long-run (even if above short-run) marginal cost is not a response to changes in demand or supply, but merely a device for intimidating or destroying an equally or more efficient competitor, it is inefficient.").

[155] *See supra* n.141.

[156] *See AMR Corp*., 335 F.3d at 1120.

had previously indicated that such increases would be unprofitable."[157] The Justice Department further had proffered persuasive evidence of either actual or likely recoupment: "Once the [lower-cost competition] ceased or moved its operations, American generally resumed its prior marketing strategy, reducing flights and raising prices to levels roughly comparable to those prior to the period of low-fare competition."[158]

The Tenth Circuit of course lacked the authority to ignore cost evidence:[159] Supreme Court precedent unequivocally established the necessity of comparing the monopolist's costs and prices. Ignoring that requirement would have violated the rule of law — which demands, before attaching civil liability, a reasonably clear body of legal rules and standards that parties can access to identify their legal obligations,[160] a particularly important condition for businesses conducting trade and investing.[161] Professor Einer Elhauge has argued, moreover, that American's pricing policies merely amounted to price discrimination, which generally can improve efficiency and increase output.[162] As well, the case reached the 10th Circuit only four years after the 9/11 attacks, which cost the airline industry billions in lost revenues and ushered several competing airlines to bankruptcy. Southwest runs a hub at Love Field in Dallas, so American faced fierce competition on short-haul flights, though less on medium- to long-haul flights given that Delta Airlines removed a bulk of capacity at DFW in 2004.

But the decision did not discuss any such factors, mentioned the existence of recoupment and hence anticompetitive effects only in passing, and instead focused exclusively on the appropriate cost benchmark. The uncontested existence of anticompetitive effects could have

[157] *Id*. at 1112. *Brooke Group* still required pricing below some measure of cost, however.
[158] *Id*.
[159] *See* Page, *supra* n.3 at 1305 ("Sharp changes in existing law disappoint expectations, and thus undermine the legitimacy of the process.").
[160] I am particularly grateful here to King's College and presenters on another panel at the IGLRC for discussing the rule of law in the context of international relations and human rights.
[161] *See* TOM BINGHAM, THE RULE OF LAW 38 (Penguin Books 2011) (2010).
[162] *See* Elhauge, *supra* n.147 at 743.

influenced the Department of Justice's burden of proving below-cost pricing, or at least affected which of the four cost measures the Court accepted, when in fact it accepted none. Ignoring anticompetitive effects and ruling on the basis of a decision-making factor constructed to predict anticompetitive effects constitutes deontological reasoning that unduly risks inaccurate results and, perhaps worse, injustice, here to airline consumers.[163]

3. Conclusion

Effects analysis constitutes a decision-making factor and mode of inquiry separate from examining costs, the probability of recoupment, profit sacrifice, objective intent, and market power — factors either procured from, or heavily influenced by, NPT that attempt to predict competitive effects. By identifying the appearance of the two independent variables — decision-making factors derived from NPT and effects analysis — in appellate decisions, therefore, one can attempt to assess how each variable influences the dependent variable, plaintiffs' probability of success in predatory pricing cases.

IV. Results

1. Overall Results

Initially, from 1950 to 1975, prior to Areeda & Turner's article, federal appellate courts issued only 7 reported predatory pricing decisions; fifty-five such decisions, from 1976 until the present, followed that article. Thus, Areeda & Turner's article likely prompted the filing of many more predatory pricing claims, or at least augmented the number that reached the federal appellate level. Pre-Areeda & Turner, plaintiffs won 4 cases and lost 3: a success

[163] Unless the consequences of ignoring cost evidence, particularly the administrative costs of detecting predation without the benefit of a cost benchmark, far outweigh both inaccurate judicial decisions and meritorious predation cases deterred because of the difficulty of establishing below-cost pricing — which indeed *may* reflect reality given that price-cuts constitute the chief "mechanism" of competition and given the consequent difficulty of separating pro- from anti-competitive price-cuts, *see AMR Corp*., 335 F.3d at 1114 ("Because the mechanism by which a firm engages in predatory pricing — lowering prices — is the same mechanism by which a firm stimulates competition, mistaken inferences may deter the very conduct the antitrust laws were created to protect." (internal quotations omitted)).

rate of 57%. Post-Areeda & Turner, plaintiffs have won 13 cases, losing 43, for a success rate of 23%. Notwithstanding the limited number of data points, the evidence still demonstrates a fairly robust link between the publishing of Areeda & Turner's article and appellate courts hearing a substantially greater volume of predatory pricing claims, of which plaintiffs prevailed at a lower percentage.

The Supreme Court decided *Matsushita* in 1986. Prior to *Matsushita*, plaintiffs won 11 predatory pricing cases at the federal appellate level and lost 22, a success rate of 33%. Post-*Matsushita*, plaintiffs have won 6 predatory pricing cases and lost 24, for a 20% success rate — representing a fall in that rate of more than 1/3. I cannot conclude from this evidence that *Matsushita* caused plaintiffs' success rate to fall, but a discernible relationship between the *Matsushita* judgment and a subsequently lower success rate appears to exist, strengthened by the fact that the cases analyzed here constitute the entire population of data points available, eliminating the risk of sampling error.

The U.S. Supreme Court decided *Brooke Group* in 1993, almost twenty years ago, but 18 years after Areeda & Turner's article. Prior to *Brooke Group*, plaintiffs won 16 predatory pricing cases at the federal appellate level and lost 33, resulting in a 33% success rate. Post-*Brooke Group*, plaintiffs have won *one* case at the federal appellate level, while losing 13 — a success rate of 7%, well below the overall success rate of 27%. Not only has plaintiffs' success rate noticeably fallen since *Brooke Group* — from 33% to 7%, almost by 4/5's — but the number of cases reaching appellate courts has fallen as well. From Areeda & Turner's article in 1975 until the 1993 judgment in *Brooke Group*, U.S. federal appellate courts decided 42 predatory pricing cases; after *Brooke Group*, from 1993 until 2012, federal appellate courts have decided just 14. Thus, from 1975 until 1993, a period of 18 years, U.S.

appellate courts decided 3 times more predatory pricing cases than from 1993 until the present, a period of 19 years. While this fact simply may indicate a settled body of law, reducing the need for appellate courts to hear appeals, it also supports the claim that *Brooke Group* lowered the probability of plaintiffs winning predatory pricing cases, though the evidence again fails to establish causation.

2. Neoclassical Price Theory (NPT) & Only Effects

U.S. federal appellate courts applied decision-making factors derived from NPT in 61 of 63 reported cases. This fact should not surprise, since the legal test for predatory pricing — evidence of below-cost pricing and a dangerous probability of recoupment — constitute 2 of the 5 decision-making factors selected to represent NPT. The results when appellate courts applied NPT essentially mirror the overall results because appellate courts considered only effects, to the exclusion of NPT, in just two reported cases since 1950 — both of which plaintiffs lost.

The low number of cases in which appellate courts considered only effects analysis significantly reduces the confidence of comparisons and conclusions drawn from this category of cases, but the fact that plaintiffs lost both cases in which appellate courts considered effects to the exclusion of decision-making factors drawn from NPT at least does *not* support the hypothesis that effects analysis increases the probability of plaintiffs winning predatory pricing cases, since that probability only can increase from 0%.

3. Only Neoclassical Price Theory (NPT)

This category sets-out the results when courts only applied factors derived from NPT — to the exclusion of effects. Prior to the publication of Areeda & Turner's article, plaintiffs won 3 of 5 such cases, or 60%; post-Areeda & Turner, plaintiffs won 11 of 40 cases, or

27.5%. Prior to the Supreme Court's judgment in *Matsushita*, plaintiffs won 10 of 27 cases, or 37%; post-*Matsushita*, plaintiffs won 4 of 18 cases, or 22%. Prior to the Supreme Court deciding *Brooke Group*, plaintiffs won 14 of 37 cases in which the appellate court applied only NPT factors, or 38%; after *Brooke Group*, plaintiffs have lost all 8 such cases, or won 0%.

The evidence here is inconclusive, and not only because of the small population size. Prior to *Brooke Group*, plaintiffs' success rate in predatory pricing cases actually improved when appellate courts applied only NPT compared to all relevant factors (as reflected in the overall results), although marginally: 60% v. 57% pre-Areeda & Turner's article; 37% v. 33% pre-*Matsushita*; and 38% v. 33% pre-*Brooke Group*. This evidence also does *not* support the hypothesis that NPT has lowered plaintiffs' probability of winning predatory pricing cases compared to effects analysis. But plaintiffs lost all 8 cases post-*Brooke Group* in which appellate courts applied only NPT factors, compared to 7% in which appellate courts considered all relevant factors — evidence that supports the hypothesis here post-*Brooke Group*.

4. Overall Effects

Federal appellate courts considered the actual effects of predatory pricing in just 18 of 63 reported cases since 1950 — of which plaintiffs won merely 3, or 16.7%. Because plaintiffs' appellate success rate in all reported predatory pricing cases is 27%, the evidence indicates that plaintiffs in fact fared worse when appellate judges considered the actual competitive effects of predatory pricing. At minimum, the evidence weakens the claim that applying decision-making factors inspired by NPT rather than effects analysis lowers the probability of plaintiffs winning predatory pricing cases.

5. Both Neoclassical Price Theory (NPT) & Effects

Federal appellate courts have employed both NPT factors and analyzed effects in 16 of 63 reported predatory pricing cases since 1950; plaintiffs won 3 such cases, or 18.7%. While this evidence lacks significant explanatory value because of the small population size and because of the limited differential between success rates, the evidence nevertheless does *not* support the original hypothesis, since plaintiffs more likely succeeded in the subset of effects cases in which appellate courts considered NPT factors and effects — winning 18.7% — compared to all effects cases — winning 16.7%, which include 2 cases featuring only effects analysis.

6. Conclusion

Neoclassical Price Theory (NPT) significantly has influenced predatory pricing law: The legal test for predatory pricing — demonstrating below-cost pricing and a dangerous probability of recoupment — derives from the NPT tenets of rationality, competition, and efficiency. The overall results of this study arguably reflect the overall influence of NPT on predatory pricing law. Plaintiffs' success rate in appellate courts has fallen progressively since Areeda & Turner's influential article defining predatory pricing as pricing below average variable cost, reaching a current nadir in the last 19 years since the Supreme Court decided *Brooke Group*, during which plaintiffs have won only 1 case. However, effects analysis — either exclusively or combined with NPT factors — has not improved plaintiffs' probability of success; rather, the data suggests that plaintiffs were less likely to win when appellate courts considered the actual effects of predatory pricing schemes.

V. Behavioral Economics

The fact that plaintiffs have won one reported predatory pricing case at the U.S. federal appellate level since *Brooke Group* may outrage or comfort depending on one's ideological commitments. Either way, the application of Neoclassical Price Theory (NPT) to predatory pricing claims, at least since 1993, appears to have lowered plaintiffs' probability of winning predation cases drastically, from an overall rate of 27% to 7%. Predatory pricing law, and the tenets of NPT upon which it rests, have not changed significantly since Areeda & Turner's seminal article in 1975, almost 40 years ago. Meanwhile, the field of behavioral economics, a marriage between psychology and economics, has produced evidence weakening the NPT claim that maximizing utility and profits motivate all market activity. As the 40th anniversary of Areeda & Turner's article and the 20th anniversary of *Brooke Group* approaches, perhaps now constitutes an appropriate time to evaluate whether behavioral economics can add insights and predictive accuracy to the unrivalled contributions of NPT, and to evaluate whether any adjustments to current predation law might abate the rout of plaintiffs since *Brooke Group*.

1. What is Behavioral Economics?

Behavioral economics disputes the claim that individuals maximize clearly-defined preferences in most circumstances; rather, behavioral economists assert that individuals regularly display bounded rationality, bounded willpower, and bounded self-interest.[164] Bounded rationality limits the rationality preached by NPT in that:

> To function effectively in a complex world, boundedly rational individuals must rely on cognitive heuristics — simplifying mental shortcuts — that inevitably lead people to make some systematic decision errors; as a result,

[164] *See* RICHARD H. THALER & CASS R. SUNSTEIN, NUDGE: IMPROVING DECISIONS ABOUT HEALTH, WEALTH & HAPPINESS (2009); BEHAVIORAL LAW & ECONOMICS (Cass R. Sunstein ed., 2000); Christine Jolls et al., *A Behavioral Approach to Law & Economics*, 50 STAN. L. REV. 1471 (1998). *But see also* Richard A. Posner, *Rational Choice, Behavioral Economics, and the Law*, 50 STAN. L. REV. 1551 (1998).

> their behavior necessarily deviates from that predicted by rational actor models.[165]

These heuristics, such as loss aversion, the endowment affect, the availability heuristic, and overconfidence bias,[166] cannot replace the more-generalized NPT concept of rationality — of maximizing utility or satisfaction, which in the context of suppliers, translates into maximizing profits. Instead, heuristics signify the idea that individuals will not respond to all market stimuli as NPT predicts but will deviate systematically from particular stimuli in a predictable manner.

For example, individuals care a great deal more about losing a particular amount of utility than about gaining the equivalent amount, even though rationality predicts indifference between the two outcomes.[167] Individuals also demand a greater sum to sell a good that they already own than "they would be willing to pay to obtain [the good] in the first place"[168] — which the theory of rationality cannot explain, predicting an equivalent price. When calculating the probability of an event occurring, individuals adjust that probability based on anecdotal evidence, based on whether similar events come readily to mind: "[E]vents that are highly available are typically ones that have received a great deal of media attention, and are often ones that are intrinsically vivid or memorable, or have a technological nature."[169] Rational individuals would make no such adjustment, given the irrelevance of anecdotal evidence to predicting the probability of an event occurring. And individuals exhibit overconfidence in predicting the future in that "they overestimate their positive traits,

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[165] Avishalom Tor, *The Fable of Entry: Bounded Rationality, Market Discipline, And Legal Policy*, 101 MICH. L. REV. 482, 484 (2002).
[166] *See, e.g.*, Maurice E. Stucke, *Behavioral Economists at the Gate: Antitrust in the Twenty-First Century*, 38 LOY. U. CHI. L.J. 513, 527-528 (2007).
[167] *See id*. at 527.
[168] Robert A. Prentice, *Chicago Man, K-T Man, and the Future of Behavioral Law and Economics*, 56 VAND. L. REV. 1663, 1700 (2003)).
[169] Christine Jolls, *Behavioral Economics Analysis of Redistributive Legal Rules*, 51 VAND. L. REV. 1653, 1662 (1998).

abilities, skills, and likelihood of experiencing positive events, while they underestimate their vulnerability to certain risks"[170] — errors that a rational individual would not commit. Overconfidence bias, which includes underestimating the risk of failure, particularly "thrives in the business community, including among investors and corporate managers."[171]

Bounded willpower means that individuals often knowingly act against their own long-term self-interests. Think smoking despite acute awareness of the health risks posed or under-saving despite excess income, limited social security, and comfortable retirement plans.[172] Bounded self-interest refers to the observation that individuals "may aspire toward benevolence in accordance with some religious or social norm of fairness even though such behavior deviates from the tenets of wealth maximization."[173] Note, however, that ostensibly bounded self-interested behavior need not deviate from wealth maximization — and thus may constitute rational behavior — if one considers the behavior over an extended time frame when, for instance, a firm foregoes profits to build good will that later yields monetary dividends.[174]

If behavioral economics is to enhance the predictive accuracy of NPT as applied to predation law by limiting false-negative errors,[175] it cannot merely identify irrational or boundedly rational behavior by a monopolist, explaining why a monopolist might predate,

[170] Tor, *supra* n.165 at 505.
[171] Leslie, *supra* n.33 at 276.
[172] *See* Jolls et al., *supra* n.164 at 1479.
[173] Stucke, *supra* n.119 at 529.
[174] *See generally* Posner, *supra* n.164.
[175] For a concise articulation of error costs, *see* Page, *supra* n.3 at 1241("These costs include the direct costs of the legal system in administering the rule and the indirect cost of enforcing the rule. In the latter category are costs of under-inclusiveness (monopolistic effects of the practice that will be permitted), over-inclusiveness (efficiencies of the practice that will be prohibited), and error (costs of over-deterrence from likely false positives or under-deterrence from false negatives)." (internal quotations omitted)). Professors Joskow & Klevorick, *supra* n.53, originally formulated the error-cost framework as a relevant antitrust tool; Judge Easterbrook, *supra* n.23, made the analysis famous. *Cf.* THE GLOBAL LIMITS OF COMPETITION LAW (Ioannis Lianos & D. Daniel Sokol eds., 2012) (discussing the impact of Easterbrook's *Limits of Antitrust* on Competition law).

because non-profit maximizing price cuts increase consumer welfare: Consumers benefit from lower prices that eventually do not rise to supra-competitive levels or that the monopolist does not recoup in some other fashion. Rather, to expand the variety of predatory schemes that the Sherman Act forbids, behavioral economics still must explain how seemingly irrational, or boundedly rational, behavior confers profits on the dominant firm, how boundedly rational behavior actually constitutes rational behavior. Given that objective, behavioral economics complements or further explicates rationality and recoupment by helping to identify profit-maximizing price cuts. While behavioral economics also might expand the legally-recognized motivations for predating, unless those causes eventually yield higher prices or another form of recoupment, consumers win.

Critics of behavioral economics have argued that the theory is indeterminate, not least because it offers no guidelines for determining the net effect of how various heuristics interact both within a dominant firm and between competitors.[176] Below I will attempt to respond to this criticism by setting out the objectives of a monopolist, its rivals, and the law when predation occurs and evaluate how behavioral economics can assist in explaining those objectives and the corresponding actions of competitors in a market characterized by dominance.

[176] *See, e.g.*, Joshua D. Wright & Judd E. Stone II, *Misbehavioral Economics: The Case Against Behavioral Antitrust*, 33 CARDOZO L. REV. 1517, 1524 (2012). For a hard-hitting criticism of behavioral economics more generally, *see* Joshua D. Wright & Douglas H. Ginsburg, *Behavioral Law And Economics: Its Origins, Fatal Flaws, And Implications For Liberty*, 106 NW. U. L. REV. (forthcoming 2013).

2. Objectives

a. Monopolist

The two most important decisions that a monopolist takes concerning predation are, initially, to cut prices drastically to a level below some measure of cost, and subsequently, to raise prices again to supra-competitive levels. In considering each decision, NPT posits that the monopolist will aim only at maximizing profits, the overarching objective, but subsidiary objectives also may exist: A monopolist may predate to expel a competitor from the market, to deter a rival from entering the market, or to discipline a competitor that competes too fiercely. Yet a monopolistic entity decides on pricing only through managers, individuals to whom the rationality principle should apply. Corporate governance law long ago recognized that self-interested managers who formulate and execute policy may pursue objectives other than long-run profit maximization, such as short-term profit-maximization, meeting growth targets, or revenue maximization — all to earn promotions or boost bonuses.[177]

Neoclassical economists and price theorists generally have responded that the threat of hostile takeovers, the possibility of shareholders or boards of directors replacing managers, and the existence of profit maximizing competitors limit such freedom.[178] The ideas here are that corporate raiders can earn huge sums identifying and replacing underperforming managers, so competition in the market for corporate governance should prevent self-interested managerial behavior; that corporate governance law entrusts directors to monitor managers and to ensure that they maximize shareholder value; that shareholders have the self-help remedy of replacing directors who inadequately monitor underperforming managers; and finally, that competition in the relevant product market will check managers who fail to

[177] *See* Pindyck & Rubinfeld, *supra* n.38 at 282.
[178] *See id*.

maximize profits by punishing their firms and promoting rivals run by profit-maximizing managers.

But the existence of market power or dominance in the product market changes the calculus, weakening the effectiveness of these processes in holding managers accountable. Dominant firms (operating outside of niche markets) may constitute less appealing takeover targets given that market power probably already has inflated the firm's share price and has allowed the stock-piling of financial reserves conducive to blocking and thus deterring hostile bids. While market power in various markets may not wholly obstruct or deter a determined, deep-pocketed suitor such as Google or Apple, market power at least would slow the pace of takeovers, permitting dominant firm managers to pursue objectives other than profit-maximization. The same principle applies to rival firms already operating in the relevant product market: Market power equates with weakened competition, the ability of the dominant firm to influence the market price and thus the ability to act independently of competitors, so by definition, rivalry already fails adequately to restrain the dominant firm, creating scope for behavioral economics to operate at least over the medium term.

While a dominant firm's share price might fall due to unprofitable predation, thereby attracting suitors or indirectly strengthening actual or potential competitors, the fact of dominance hinders even this result by eliminating the premise: Dominance significantly raises the probability that predation — even if originally motivated by bounded rationality — actually will succeed. Remember that market power signifies the existence of entry barriers and inelastic demand, meaning that the dominant firm can raise price without consumers switching to other suppliers and without rivals entering the market to supply a similar

product at a lower price.[179] Thus market power can convert otherwise irrational pricing into a rational, profit-maximizing predatory pricing scheme by enabling recoupment.

Given the absence of competition in the relevant product market and in the market for hostile takeovers, moreover, even the most diligent directors or shareholders may be unable to identify and replace underperforming, boundedly rational managers because market power prevents competitors from capitalizing on, and thus punishing, boundedly rational acts, creating an artificial price floor under the share price. Directors and shareholders in any event may have no incentive to discipline or replace managers who initiate predatory pricing for boundedly rational reasons, predatory pricing that nevertheless proves successful because of market power — in which case predation constitutes a profit-maximizing strategy, for which directors and shareholders even might reward managers if the predation, though illegal, goes undetected. The point is that market power or dominance might prevent the operation of normal market mechanisms relied upon by corporate law and NPT to prevent managers from pursuing ostensibly irrational pricing policies.

All this might prompt the observant skeptic to respond that behavioral economics does not expand the existing predatory pricing test inspired by NPT in that the relevant focus remains on recoupment: Regardless of whether rational or boundedly rational reasons motivated dominant firm managers, and regardless of whether market power hampered the normal operation of product and managerial market mechanisms, what ultimately matters is whether the predation proves profitable, whether recoupment occurs. But such a response fails to capture all relevant considerations. Just as the profit sacrifice test or cost tests help

[179] Market power predominantly equates with high market shares, in the U.S. customarily starting at 70%. *See U.S. v. Aluminum Co. of Am.*, 148 F.2d 416, 424 (2d Cir. 1945) (Hand, J.) ("The percentage we have already mentioned — over ninety — results only if we both include all 'Alcoa's' production and exclude 'secondary'. That percentage is enough to constitute a monopoly; it is doubtful whether sixty or sixty-four percent would be enough; and certainly thirty-three per cent is not.").

identify potentially anticompetitive pricing decisions, employing bounded rationality to dominant firm managers can serve the same function. Current law calls for judges to evaluate recoupment only after determining the existence of below-cost pricing. Similarly, plaintiffs could proffer evidence of pricing decisions guided by bounded rationality as a prerequisite to evaluating market power more closely and the existence, or likely existence, of recoupment. While the critical factor might remain the degree of structural market power, a NPT consideration, the existence of behavioral motivations to pricing decisions, just like irrational below-cost pricing or profit sacrifice, might trigger the necessity of considering recoupment, and thereby expand the means of establishing predation.

b. Rivals

The two decisions by rivals most likely to incite predatory pricing include entering a market or significantly expanding output and lowering price. Like dominant firms, rivals too seek to maximize profits, to raise entry barriers and differentiate their products so as to lower the elasticity of demand and maximize the difference between price and the output level where marginal revenue equals marginal cost, to increase market share, and even to drive the incumbent from the market. In evaluating an entrant's objectives, one cannot assume that an entrant is either small or large, since dominant firms in adjacent markets might consider investing the resources necessary to enter the monopolized market, notwithstanding significant barriers to entry.

Unlike the monopolist, however, rivals and their managers probably cannot afford to indulge in boundedly rational, or irrational, foibles — *at least when such foibles prompt entry or expansion*: They must maximize profits because they either currently face, or will face, fierce competition from the monopolist, assuming collusion does not follow predation. And

firms dominant in other markets, though perhaps possessing significant financial resources, nevertheless probably will focus on maximizing profits when considering entry because of entry barriers and the financial sums at stake — although significant uncertainty concerning market conditions, the capacity of the monopolist, and the monopolist's reaction to entry almost invariably will exist,[180] limiting the potential entrant's ability to maximize profits rationally without engaging in boundedly rational reasoning. Still, if rivals nevertheless engage in boundedly rational expansion or entry, that decision probably will enhance consumer welfare by strengthening competition, spurring innovation, and lowering prices.[181] But if bounded rationality *prevents* managers at rival firms from entering into or expanding within a dominant market — or leads to collusive pricing — then failing to identify how bounded rationality relates to predatory pricing reduces consumer welfare by improving the effectiveness of predation.

c. Law, Economics & Society

Though an unattainable goal, monopolization law generally aims to promote perfect competition, which results in efficiency and lower prices to consumers.[182] A society featuring perfect competition in all markets, however, would not maximize welfare. Innovative drugs, software that improves work productivity, and hugely popular gadgets that make people happy all would not exist in perfectly competitive markets: Firms operating in such markets may not be able to accumulate the financial capital necessary to innovate and

[180] *See* Tor, *supra* n.165 at 525 ("[W]hen the decision environment is more ambiguous — a function of the *quality* and *type* of one's knowledge as well [as] the amount of information — entrants are likely to be more biased. The presence of uncertainty provides opportunity for bias while the ambiguity of the decision environment 'legitimates' the operation of egocentric, self-serving perceptions.").
[181] *See id*. at 540-42.
[182] *See supra* Part II.

anyway have no incentive to do so because, absent control over price, firms cannot recover the investment in innovation plus an extra amount necessary to reward the risk taken.[183]

Yet allowing a monopolist to price at average variable cost (AVC) does little to enhance investment incentives, since a monopolist does not cover any fixed costs at that price. Indeed, one could argue quite forcefully that allowing a monopolist to price between AVC and average total cost (ATC) fails to make innovation more attractive, since at that price, the monopolist again fails to cover all fixed costs and does not earn even an economic rate of return, which it could earn by investing in bonds. While investment incentives loom large, therefore, in other areas of monopolization law, such as refusals to deal, promoting efficiency and lower prices — beyond the immediate term — constitute more important objectives for predatory pricing law.

3. Application

a. Loss Aversion, Endowment Effect & Bounded Self-Interest

Loss aversion occurs when individuals care much more about losses than about equivalent gains; the endowment effect reinforces that conclusion by demonstrating that individuals demand higher payment to sell an object already part of their endowment than to purchase the equivalent object having never owned it.[184] Monopoly profits, the aspiration of all businesses, can reach considerable levels. Even if modest, the endowment effect and loss aversion must attach equally to monopoly profits as to coffee mugs and other more mundane widgets, as rent-seeking behavior by monopolists, such as government lobbying, demonstrates. Having obtained the objective of their pursuits — the pinnacle in business achievement — managers at dominant firms are unlikely to stand down when a competitor

[183] *See generally* Elhauge, *supra* n.61 at 269, 274.
[184] *See supra* Part V.

threatens entry into its market — threatens forcefully to take that endowment by outperforming dominant firm managers, by beating them. Indeed, loss aversion and the endowment effect must apply with considerable strength to monopoly profits, given that, in the original experiments, the subjects at least received remuneration for selling the object, whereas competition from entry often represents a zero-sum struggle for profits with no corresponding benefit.

Bounded self-interest may compound the urge to defeat entry by all means available to dominant firm managers. U.S. society effectively has institutionalized the will to compete and the desire to win: Americans love winners. Proof for this assertion lies in the wild popularity of, and money sloshing around in, professional sports, in steady or increasing application rates to elite universities despite the costs of attendance spiraling upwards, and in the very form of government operating in the U.S., as democracy requires politicians to defeat another candidate merely to remain employed. To reach a level of pricing oversight at a dominant firm, a manager generally must have competed effectively, even fiercely, surpassing rivals from university upwards through the ranks of the dominant firm. Confronted with entry, a challenge to their superiority and to their very professional existence, dominant firm manager might price below-cost to defeat entry even if they do not anticipate fully recouping the investment in below-cost pricing — thereby acting irrationally or against self-interest according to NPT. The institutional environment at a dominant firm further might reward such aggression, whereby a manager may earn non-monetary remuneration, such as the esteem and respect of contemporaries and coworkers, by vanquishing rivals or deterring entry.[185]

[185] *Cf*. HERBERT A. SIMON, ADMINISTRATIVE BEHAVIOR 92 (4th ed. 1997) ("[T]o assert that behavior in organizations is boundedly rational does not imply that the behavior is always directed toward realizing the organization's goals.

Given the previous lack of competitive pressure and the resulting profits that characterize monopoly, managers at dominant firms not only have the incentive to protect monopoly profits, they also have the freedom and the financial ability to guard their endowment. The tested response to loss aversion and the endowment effect suggests that dominant firm managers would pay more to avoid the loss, to keep the endowment, than the actual value of that endowment. Stated differently, dominant firm managers might well be willing to incur a loss to avoid the complete loss of monopoly profits — might well be willing to price below cost even if full recoupment never occurs.

Antitrust law cares little about monopoly losses unless those losses cause consumer harm, which in the case of predatory pricing means subsequently higher prices, either directly or indirectly, from deterring entry or cowered competition. The question of consumer harm turns on market power and the time frame over which to evaluate higher prices. If demand is quite inelastic and significant entry barriers exist — if the dominant firm wields considerable market power — then recoupment should occur expeditiously, even if dominant firm managers did not initiate predation to maximize profits. Even if prices do not rise immediately, thereby enabling recoupment, over the medium to long-term, a monopolist willing to engage in and thus build a reputation for predation likely will earn additional profits from the reputation itself blocking entry.

Quantifying reputation effects always will prove difficult and could amount to testimony by deterred-entrant managers who presently could gain from weakening the monopolist's position. To establish reputation effects, the EU Commission has required "evidence not

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Individuals also strive rationally to advance their own personal goals, which may not be wholly concordant with organizational goals, and often even run counter to them."); *see also cf. id.* at 322 ("The need for an administrative theory resides in the fact that there *are* practical limits to human rationality, and that these limits are not static, but depend upon the organizational environment in which the individual's decision takes place." (emphasis in original)).

only that multiple markets or periods exist, but also that the dominant company pursues such a reputation effect strategy and that the (successive) potential entrants can observe the adverse conditions imposed on or the exit of the current prey."[186] Quantification difficulties, however, do not negate the existence of the phenomenon: Evidence that illuminates the motivations for, and potential consequences following, significant price-cuts in monopolized markets is relevant to whether predation exists — though quantification difficulties might affect the weight attached to reputation evidence.

b. Availability Heuristic & Overconfidence Bias

The availability heuristic states that individuals allow anecdotal evidence, such as whether a similar event comes readily to mind, to influence probability calculations.[187] Neoclassical Price Theory (NPT) has modeled entry in game theoretic terms, which not only assumes that incumbents and entrants individually act rationally, but further assumes that, in deciding whether to enter or how to respond to entry, each party accounts for the rationality of the other party, essentially by asking the following question: "If I believe that my competitors are rational and act to maximize their own payoffs, how should I take their behavior into account when making my decisions?"[188] Players prefer "dominant strategies," which maximize welfare no matter what the other player does, but often settle for a "Nash Equilibrium," which maximizes welfare given what the other player does.[189] In the game of entry, incumbents and entrants both might exhibit bounded rationality and further plan for the other party exhibiting bounded rationality. The possibility of incumbents and entrants

[186] DG Competition Discussion Paper on the Application of Article 82 of the Treaty to Exclusionary Abuses, Public Consultation (Brussels, December 2005) at Para. 119, *available at* http://ec.europa.eu/competition/antitrust/art82/discpaper2005.pdf.
[187] *See supra* Part V.
[188] Pindyck & Rubinfeld, *supra* n.38 at 488.
[189] *See id*. at 492.

maximizing welfare subject to heuristics adds additional uncertainty to the entry game, since each participant must determine, prior to acting, whether the other party will respond rationally or boundedly rationally. The availability heuristic fosters no such uncertainty, however, because it reinforces the attractiveness of predation assuming entry constitutes a repeated game.

In the standard NPT model of rational entry, the entrant may or may not view the entry game as recurring, but for the monopolist, combating entry will constitute a repeated game, in which reputation matters: Monopolist managers know that future entrants will study how the monopolist responded to entry when calculating their strategies.[190] Facially irrational actions, such as pricing below cost, actually may prove rational and maximize profits over the long-term by deterring entry.[191] Given all the information available, for example, a rival may determine that entry would yield profits because a rational, profit-maximizing monopolist would refrain from predating post-entry, but if, in fact, the monopolist had predated after each prior entry attempt, the rival cannot plan for the monopolist pricing rationally post-entry — which could deter profit-maximizing entry. Ostensibly irrational predatory pricing here constitutes a long-term profit-maximizing strategy,[192] a behavioral entry barrier that exists because the entrant cannot rely on the incumbent maximizing short-term profits post-entry.[193]

Now consider how the availability heuristic reinforces the attractiveness of predation if entry constitutes a repeated game. In deciding whether to enter, a rival probably will

[190] *See id*. at 498.
[191] *See* Leslie, *supra* n.33 at 299 ("The recoupment will come as the dominant firm does not have to carry out the threat in the future. Merely making the threat should suffice going forward, as potential entrants will have greater confidence that the dominant firm will carry out even facially unprofitable (read: irrational) threats.").
[192] *See id*. at 300 ("Decisions that appear 'irrational' in the short term can lead to credible threats in the long run.").
[193] *See* Pindyck & Rubinfeld, *supra* n.38 at 512.

overemphasize the prospect of predation if the monopolist previously has predated, particularly if the monopolist predated recently, because of the availability heuristic. In calculating the probability of predation assuming imperfect information, which almost always exists, prior similar instances of predation will distort the entrant's assessment of whether the monopolist will predate again post-entry. An entrant subject to the availability heuristic is more likely to forego profitable entry, raising the profitability of predation even if the incumbent cannot recover all the investment in below-cost pricing by subsequently raising prices. In this instance, predation could prolong a lower level of monopoly profits yet still maximize profits over the long-term. In deciding whether to predate, the monopolist might account for the intimidating effect on future entrants captured by the availability heuristic — knowledge that further raises both the profitability and the probability of predation occurring *even if* the monopolist cannot recoup until the game repeats, perhaps in the distant future.

Overconfidence bias also might inflict current and future entrants, counteracting the effect of the availability heuristic by causing entrants to discount the risk of both predation and failure post-entry and to view the probability of successful entry more highly than rationality dictates. Professor Tor has documented how rivals, when contemplating entry, often exhibit "insensitivity to the expected intensity of competition in high-profit industries" post-entry, while also ignoring entry barriers.[194] Professor Leslie, by contrast, has described how overconfidence bias also might afflict the monopolist in that "the more that a firm values an outcome — [] monopoly power — the more likely it is that overconfidence will bias the decision-making process."[195] Knowing that the overconfidence of rivals might

[194] *See* Tor, *supra* n.165 at 493.
[195] *See* Leslie, *supra* n.33 at 308.

prompt entry notwithstanding the existence of structural entry barriers, moreover, further might enhance the attractiveness and rationality of trying to block entry by predating and thus raising behavioral barriers to dissuade even attempts to appropriate endowed monopoly profits, thereby also triggering the availability heuristic in rivals.

Though behavioral economics offers no theoretical means to determine which heuristic ultimately will cause or prevent predation, a pragmatic analysis at least suggests the profit-maximizing potential of predation, or alternatively, refutes the claim that predation rarely ever occurs. Most relevant considerations — the overconfidence of the potential entrant, the availability heuristic operating on the potential entrant, the overconfidence of the monopolist, bounded self-interest operating on the monopolist,[196] loss aversion and the endowment effect influencing both the entrant and monopolist,[197] in addition to the rational NPT view that entry constitutes a repeated game in which a reputation for predation can deter entry — highlight the potential prevalence of predation.[198]

c. A Recommendation

At minimum, proof concerning the operation of heuristics might influence a plaintiff's burden of "production and persuasion,"[199] since "the placement of the burden depends upon the court's view of human nature."[200] According to Professor Page, current monopolization law relies on NPT models that theoretically determine, prior to even considering the particular facts of a given claim, the plausibility of exclusionary practices, which then affects plaintiffs' burden of proof. For example, if a particular practice constitutes an implausible

[196] Bounded self-interest, of course, will motivate the entrant to win as well.
[197] Investing always requires overcoming loss aversion and the endowment effect, assisted by the prospect of high rates of return.
[198] *But cf.* Tor, *supra* n.165 at 531-33.
[199] *See* Page, *supra* n.3 at 1281 ("Burdens of production and persuasion are allocated and measured according to a range of factors, including the court's assessment of probabilities based upon its experience.").
[200] *Id*.

method of securing monopoly profits, "then the court may require more evidence of an anticompetitive effect."[201] And even if a particular practice plausibly could earn monopoly profits, "if permitting the monopolistic inference would deter efficient conduct, the court may require evidence that tends to exclude the efficient characterization."[202] Current law views predatory pricing as both implausible and as otherwise generally efficient,[203] which explains the stringency with which federal appellate courts have applied NPT to plaintiffs' predation claims since *Brooke Group*. If behavioral economics tends to prove that predatory pricing actually may occur more frequently than previously assumed, then courts henceforth might accept less convincing evidence of recoupment, or perhaps view pricing that includes a measure of fixed costs as a sufficient benchmark to measure efficiency.[204]

Alternatively, in the current existing legal framework for predatory pricing, heuristics might constitute both objective and subjective evidence of intent. Judges and enforcers might evaluate the objective intent of the monopolist by considering evidence of previous instances of drastic price cuts in response to entry to determine, for instance, whether the monopolist, by currently cutting prices, is attempting to reinforce the effect of the availability heuristic. Moreover, attempted entry automatically implicates loss aversion, the endowment effect, and bounded self-interest — which ought to dispel the current view, epitomized by *Brooke Group*, that price cuts always amount to pro-competitive activity.

Drastic price cuts by a dominant undertaking in response to entry further ought to prompt a closer examination of market conditions and the probability of recoupment, particularly if

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[201] *See id*. at 1286.
[202] *Id*.
[203] *See generally id*. at 1235 ("[A]nalysis suggests that a price-cutting campaign is often not a reasonable means of increasing monopoly power; by implication, then, it is more likely a form of aggressive competition.").
[204] *Cf.* Cass R. Sunstein, *Irreversible and Catastrophic: Global Warming, Terrorism, and Other Problems*, 23 PACE ENVTL. L. REV. 3, 5-6 (2005-2006); CASS R. SUNSTEIN, LAWS OF FEAR: BEYOND THE PRECAUTIONARY PRINCIPLE (2005).

the monopolist prices below average total cost (ATC) or average avoidable cost (AAC), as American Airlines did in *AMR Corp*. After all, while society generally might wish to encourage price competition, that mechanism already fails to operate adequately in markets characterized by dominance, thus the pursuit of sustainable lower consumer prices and efficiency beyond the immediate term favors requiring monopolists to cover at least a portion of fixed costs when rivals attempt entry.

As well, the interaction of heuristics need not compel ignoring them. Although overconfidence bias always will apply to both monopolists and entrants, for example, judges or enforcers might determine the likelihood of predation occurring by examining rational and boundedly rational reasons motivating both the monopolist and the target — assessing the strength of and then tallying each heuristic and rational motive to reach a reasoned judgment as to the probability of predation. Such a method could complement the inferences that judges and enforcers draw from cost evidence. If such reasoning, closer to objective intent evidence, sounds too freewheeling or unscientific, judges and enforcers then might turn to subjective intent evidence to verify why, exactly, a monopolist decided to cut prices drastically. If, based on the operation of heuristics and rationality, a sufficiently robust motivation to engage in predatory pricing exists, then judges and enforcers next can evaluate actual or likely recoupment.

VI. Conclusion

I can discern no imminent end to the reign of NPT over U.S. predatory pricing law. U.S. appellate judges have found scant evidence of market power in dominant firms since *Brooke Group*. Or perhaps a misperception pervades the current application of predation law, in which judges assume that competition operates equivalently both in perfectly competitive

and monopolistic markets — meaning that all firms, despite the existence of market power, are capable, at all times, of pricing, or entering and pricing, at the monopolist's AVC, a price at which the monopolist does not even cover its current operating costs and at which the monopolist does not otherwise price. Perhaps legal realism has influenced enforcement: predatory pricing litigation is long and expensive, judges like clearing their dockets, and cost tests provide a handy filter to dismiss predation cases. Whatever the actual answer, the application of NPT to predation law *need not* curtail enforcement. Behavioral economics, moreover, is unlikely to reverse the rout — though it might add to the feasibility of predation claims — unless and until U.S. judges acknowledge that market power or dominance can exist in the U.S. economy and understand the anticompetitive effects that follow, in predation law and monopolization law generally.