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RECOUPMENT AND PREDATORY PRICING ANALYSIS

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RECOUPMENT AND PREDATORY PRICING ANALYSIS

Louis Kaplow*

ABSTRACT

Recoupment inquiries play an increasingly important role in antitrust analysis, yet they raise a number of conundrums: How can a failure of recoupment due to the plausible long-run profit recovery being dwarfed by short-run losses be reconciled with a defense of no predation that presupposes no short-run sacrifice to begin with? How can recoupment inquiries be diagnostic with respect to competing explanations for defendants' behavior—such as product promotion or “legal” predation—that likewise require recoupment? This article addresses these questions and others by grounding recoupment and predatory pricing analysis more broadly in a decision framework that focuses on classification (distinguishing illegal predation from other explanations for firms' pricing) and on the magnitudes of the deterrence benefits and chilling costs of imposing liability. Regarding the latter, although concerns for the chilling of procompetitive activity sensibly drive predatory pricing analysis, the great variation in chilling costs across competing explanations for alleged predation is unrecognized. Much of the analysis here is not particular to recoupment; the investigation aims to inform future research, policy, and practice regarding many aspects of predatory pricing as well as other forms of anticompetitive conduct.

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KEYWORDS: predatory pricing; recoupment; antitrust; competition policy

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TABLE OF CONTENTS

- 1 INTRODUCTION
- 2 FRAMEWORK AND APPLICATION
 - 2.1 Decision Framework
 - 2.2 Recoupment Condition
 - 2.3 Triangulation
 - 2.4 Error Costs
- 3 COMPETING EXPLANATIONS
 - 3.1 Procompetitive Investments
 - 3.2 Accommodation of Rivals
 - 3.3 Legal Predation
 - 3.4 Other Explanations
 - 3.5 False Positives Are Not Created Equal
- 4 ADDITIONAL CONSIDERATIONS
 - 4.1 Economics of Predatory Pricing
 - 4.2 Dictating Conduct versus Providing Incentives
 - 4.3 Ex Ante versus Ex Post Perspectives on Recoupment
- 5 CONCLUSION

1. INTRODUCTION

The concept of recoupment is simple: if firms are presumed to undertake predation to enhance their profits, then a firm that indeed engaged in predation must have expected that the short-run profit sacrifice (from dropping its price to drive out or discipline rivals) would generate a sufficient long-run profit recovery (when it later became able to charge high prices) to render the overall strategy profitable. Restated as the contrapositive: if the firm would have expected its long-run profit enhancement to be insufficient, then it must not have engaged in predation. This inference has become part of U.S. antitrust law on predatory pricing and is most associated with the Supreme Court's decision in *Brooke Group*.¹ Yet the relationship between predation and recoupment poses serious challenges, some of which are occasionally noticed but have not been resolved and others that have remained hidden.

A first point to note is that the connection between predatory pricing and recoupment has nothing in particular to do with predation. If everything a firm does—from hiring employees to building facilities to marketing products—is assumed to be motivated by profit-maximization, then it follows that the firm expects to recover the costs of its actions, one way or another. Therefore, recoupment applies as well to any allegedly anticompetitive conduct that is costly to undertake. Moreover, recoupment logic applies to all benign, procompetitive explanations for costly conduct, including allegedly predatory actions that are not actually so. Firms do not profit-maximize only when they engage in predation.

It is not surprising that economic analysis of exclusionary strategies has long examined their profitability through what is termed an individual rationality constraint that is akin to a recoupment requirement (*see, e.g.*, Ordover & Saloner 1989, 552–53; Salop & Scheffman 1983, 268–70; 1987, 22–23). Recoupment is taken to be central to predatory pricing analysis in particular (*see, e.g.*, Elzinga & Mills 1989, 870; Joskow & Klevorick 1979, 217, 222–23; Ordover & Willig 1981, 13). Yet the core logic of the recoupment concept raises a number of questions.

First, granting the contrapositive—that the lack of a plausible expectation of recoupment negates an explanation that presupposes recoupment—the original proposition remains: an affirmative demonstration of predation itself implies an expectation of recoupment. And those advancing predatory pricing allegations have always had to prove their case. So why isn't any recoupment requirement automatically satisfied if a case is otherwise sufficient?

Next, revisit the point that the profit-maximization assumption applies not just to predatory pricing but to anything that a firm is imagined to do. If a defendant claims that its pricing was not predatory, then it must be explained by some other strategy, and that strategy likewise must be *ex ante* profitable to be plausible. Moreover, some alternative explanations that defendants offer for their allegedly predatory activity, such as charging low initial prices to promote a new product, entail a short-run profit sacrifice, so recoupment logic applies to them as well. How does testing for recoupment help to distinguish between two competing explanations that both require recoupment?

Instead, a defendant may claim that its pricing did not involve any short-run profit

¹*Brooke Grp. Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209 (1993). On the doctrinal development in the United States and regarding the different state of the law in the European Union, where recoupment analysis can be relevant but there is no recoupment requirement as such, *see* Kaplow (2018b).

sacrifice. That is, the firm's pricing merely accommodated rivals in the sense that it was charging the short-run profit-maximizing price rather than a lower one aimed to drive rivals out of the market. In that event, there is nothing that needs to be recouped, so an inability to expect any significant long-run profit recovery is consistent with this characterization but not with predation. However, if recoupment is thought to fail because the demonstrated prospect of some long-run profit recovery is insufficient to compensate for the larger short-run profit sacrifice, then how can it be that the defendant's pricing merely accommodated rivals, which, by definition, means that there was no short-run sacrifice whatsoever? Is it that, contrary to the insistence that alleged predators are to be understood as rational profit maximizers, we are to imagine instead that the alleged predator intentionally sacrificed short-run profits in a giveaway to consumers, with no intention of ever recovering its losses?

These questions suggest that recoupment is woefully underexplored. This article presents a ground-up analysis of the economic logic of recoupment and its relationship to the optimal assignment of liability regarding an alleged predatory practice. As we will see, a number of additional dimensions of recoupment are thereby revealed, and the broader matter of how best to conduct inquiries in predatory pricing and other exclusion cases is illuminated as well, which should not be surprising since one can only make sense of recoupment by integrating it with the rest of the inquiry rather than examining it in isolation, as has often been done.²

Part 2 presents the basic framework and takes an initial pass at its application. It begins with an explicit articulation of the decision problem. Although generic and familiar in rough terms, this template nevertheless aids in the identification and examination of many unappreciated aspects of recoupment. A central feature of this framework is that both anti- and procompetitive explanations for alleged predation need to be specified up front. The recurring failure to do so helps to explain why so many of the angles examined here have been overlooked.

Part 2 next states and interprets the recoupment condition itself. Remarkably, despite all that has been written on the subject, this simple step is almost never taken, with the result that much thinking about recoupment has gone awry. For example, many believe that recoupment is often easier to assess than is an alleged predator's cost structure, failing to appreciate that the firm's costs enter the recoupment condition in a number of ways and, in particular, require one to determine the incremental cost of producing the alleged predatory quantity increase.

These foundations are then used to examine how one should analyze evidence on recoupment and on other aspects of alleged predation to triangulate on the proper characterization of the defendant's action. At this point, it is assumed that the pertinent competing explanation is that the allegedly predatory pricing involved an accommodation of rivals with no short-run profit sacrifice. If a party challenging a defendant's pricing is unable to offer affirmative proof of predation, its case fails, and this is so without regard to whether recoupment can be demonstrated. Therefore, recoupment analysis can change the outcome only when there is significant proof of successful predation, but other evidence indicates that the recoupment condition fails. This juxtaposition highlights a tension: on one hand, demonstration

²As a note to the reader before proceeding, throughout this article "recoupment" is used to refer only to the adequacy of expected profit recovery conditional on a defendant's strategy otherwise being successful. That is, the term as used here does not also encompass the requirement—stated in *Brooke Group*, 509 U.S. at 224–26, and followed by some subsequent courts and commentators—that the predator's strategy be one that would successfully eliminate or otherwise discipline the target.

of predation itself implies recoupment (rendering the inquiry unnecessary), but, on the other hand, failure of the recoupment condition contradicts predation. Elaboration of the triangulation process indicates how this tension should be resolved. The discussion also reinforces the intuition that sometimes recoupment can be a useful screen in cases in which the condition obviously fails.

Part 2 concludes by addressing how recoupment may bear not only on the classification of alleged predatory pricing as anti- or procompetitive but also on the magnitudes of concomitant effects. If the potential profit recovery is likely to be small, the anticompetitive harm of predation is likewise limited. On the other hand, conditions un conducive to substantial profit recovery (such as easy entry) also tend to reduce the social costs of chilling alleged predation that really involves competitive accommodation.

Part 3 expands the inquiry by examining a variety of competing explanations for a defendant's allegedly predatory pricing. Because recoupment analysis aims to help determine whether predatory pricing actually occurred, it is important to ask how that analysis might depend on the nature of the competing hypothesis. First, the part considers the possibility that allegedly predatory pricing is instead a procompetitive investment, such as in product promotion or moving down a learning curve so as to reduce future costs. In such cases, satisfaction of the recoupment condition is not diagnostic in a straightforward fashion because these competing explanations likewise presuppose recoupment. Moreover, some may require a greater profit recovery, so doubts about whether significant recoupment is feasible may indicate predation, favoring liability. Second, the strategy of accommodation of rivals is revisited. Recoupment fails when the expected long-run profit recovery is less than the short-term profit sacrifice, but the very presence of a short-run profit sacrifice directly rules out accommodation. Therefore, in this core situation, the diagnosticity of recoupment analysis is notably more subtle than is generally appreciated. Third, claims of illegal predation are matched against the competing explanation of legal predation, a possibility generated by rules—such as cost-based tests—that contemplate scenarios in which some actual predation in an economic sense is legally immune. Because legal and illegal predation each involve a short-term profit sacrifice, whether and how recoupment analysis may be diagnostic are refined inquiries.

Part 3 then considers other explanations that are sometimes implicit in recoupment analysis (for example, in the *Brooke Group* opinion itself): particularly, that an alleged predator may have been attempting predation when that strategy could not have been expected to be profitable. This competing explanation complexifies or contradicts the profit-maximization assumption that motivates the recoupment inquiry in the first place. Analysis of this sort of explanation proves to be quite subtle—once one rules out the occasional implicit suggestion that firms sometimes implicitly act as Santas who willfully transfer to consumers current profits that they have no expectation of recovering.

Finally, part 3 returns to the question of the magnitudes of the impact of liability decisions: specifically, the size of the social loss associated with false positives. On one hand, the concern that mistaken assignments of liability may chill beneficial conduct drives much of the argument over predatory pricing rules and how predatory pricing cases should be handled, including with respect to recoupment. On the other hand, not all false positives are created equal, and it turns out that some types are very costly, others involve less social cost than meets the eye, and yet others may even involve a social benefit (which is to say that some false positives are desirable, a result that should not be surprising when decision rules are designed as conservative

proxies for harmful conduct). Therefore, the optimal degree of caution in assigning liability in predatory pricing cases depends significantly on which competing explanation is in play.

Part 4 steps back to consider predatory pricing analysis more broadly: both the formulation of rules and their application in particular cases. It begins by discussing the theoretical and empirical economics literature on predatory pricing, which as others have noted seems to have had little effect on modern doctrinal developments despite some appearances to the contrary. Then it considers an underanalyzed aspect of optimal liability determination that is of central relevance in predatory pricing cases (and in some other antitrust settings): Most decision theoretic thinking in antitrust uses decision analysis whereas the correct perspective in the present context instead attends to how legal rules influence actors' ex ante incentives, a problem of mechanism design. Because predatory pricing enforcement is centrally concerned with the creation of deterrence and the side-effect of chilling rather than with dictating defendants' subsequent conduct, the manner in which analysis should be performed requires some important amendments.

Part 4 finally considers whether recoupment analysis should be ex ante—inquiring into whether alleged predation should have been regarded to be profitable at the time the strategy was undertaken—or ex post—asking whether the practice turned out to be profitable. The law appears to allow either to suffice, but it is natural to consider whether one in particular should be demanded or perhaps both. Of particular interest are cases in which alleged predation seems to have been ex ante profitable but the predation was unsuccessful, which raises the question whether it is optimal in this context to punish failed attempts.

Much of the analysis in this article—and in a companion paper (Kaplow 2018b), which focuses on market power, the structure of legal rules, legal institutions, and screening—is not distinctive to recoupment or even to predatory pricing more broadly. In most areas of antitrust, it is necessary to articulate competing explanations for alleged anticompetitive conduct in order to be able to distinguish them, attend to the variation in the magnitudes of anticompetitive harm and chilling costs that are central to the optimal determination of liability in the presence of uncertainty, and to recognize the interdependencies among often-siloed parts of the analysis.³ This investigation should therefore help identify fruitful directions for research, inform policy-making, and guide the investigation and resolution of particular disputes regarding a wide range of potentially anticompetitive practices. The conclusion collects some general lessons.

2. FRAMEWORK AND APPLICATION

2.1. Decision Framework

Recoupment analysis is largely a derivative inquiry.⁴ Recoupment is regarded to be of

³These broader themes are developed with respect to the role of market power in Kaplow (2017a).

⁴Some discussions of recoupment take it to be more central. *See infra* sections 2.4 & 3.4 (addressing the notion that whether pricing behavior is net undesirable from an antitrust perspective depends on whether there is recoupment). In such instances, the channel of relevance concerns the magnitudes of the impact of a firm's pricing over time, which, as suggested in this section and throughout the article, is properly understood as important in determining whether liability is optimal but remains only part of the full inquiry.

interest primarily because of the light it may cast on the desirability of assigning liability in cases of allegedly predatory pricing when there is uncertainty about what transpired.⁵ Accordingly, the first step in assessing recoupment is to state explicitly the appropriate framework for determining when liability is optimal.

The central benefit of liability in cases of alleged predatory pricing is that the expectation thereof deters harmful, anticompetitive behavior. The main cost is that the prospect of mistaken liability chills desirable, procompetitive conduct. When considering whether liability should be assigned in some subclass of cases—perhaps ones that are otherwise strong but have an uncertain demonstration with respect to recoupment—the question is whether the expected deterrence gains exceed the expected chilling costs.⁶

As a heuristic, it is useful to decompose this question into three components: classification (the relative likelihood that an act under scrutiny is predatory versus benign), the magnitude of harm averted if indeed the act is anticompetitive, and the magnitude of benefit forgone if instead the act is procompetitive.⁷ Regarding recoupment, most attention has been devoted to classification, which will also be the primary focus in this article, although recoupment can also bear importantly on both of the two magnitudes, as explored in sections 2.4 and 3.5. Nor is this latter set of inquiries a mere detail, because both magnitudes can vary tremendously across contexts (and, indeed, some false positives are actually beneficial); hence, analysis of predation rules or particular predation cases should not be confined to classification.⁸

Before proceeding, it is helpful to elaborate on the challenge of classification.⁹ The most important point—both obvious and often neglected—is that it is necessary to articulate with some specificity the classes that are to be distinguished (*see* Kaplow 2017a, 2019). The reason is that evidence on classification is comparative.¹⁰ In the simple case of two mutually exclusive

⁵As the introduction mentions, recoupment is in principle relevant, sometimes in similar ways, to a broad array of antitrust (and other) issues because the core logic is generic. *See, e.g.*, Ordovery & Saloner (1989, 552–53); Salop & Scheffman (1983, 268–70; 1987, 22–23).

⁶This formulation abstracts from administrative costs. As will become apparent, proper recoupment analysis, along with many other features of the broader inquiry into predation, is likely to be even more costly than the high levels normally assumed because of the strong information demands and complexity of the analysis.

⁷This breakdown is a heuristic device rather than a full restatement of the optimality condition because there are likely to be different probabilities associated with different magnitudes for each of the two types of acts.

⁸This limitation of basing liability entirely on probabilities (such as is done under a preponderance of the evidence rule applied to classification) is quite general. *See* Kaplow (2012a, 781–86; 2014, 16–20); *see also* Beckner & Salop (1999, 61–62).

⁹As will be explored in section 4.2, the concept of classification is itself an oversimplification in the relevant domain: the familiar classification formulation is relevant to decisions involving treatment that has direct future consequences on the treated party, whereas the central concern with predatory pricing is with ex ante incentives (deterrence and chilling) that are generated by the prospect of sanctions. The relevant concept is not classification but rather the relative deterrence and chilling effects generated by liability (both of which, as will be explained, depend on the likelihood ratio, which also underlies the exposition in the text that follows).

¹⁰It is often suggested that antitrust analysis should proceed sequentially: first, articulating and assessing an anticompetitive explanation, and then (if and only if some threshold determination has been made), identifying and assessing a procompetitive explanation. This approach—which, contrary to the prescription in the text, begins with only a single hypothesis and attempts to assess its likelihood—is illogical at a fundamental level. A formal restatement of the problem is that the strength of classification evidence, say, for Bayesian updating, is captured by the likelihood ratio—the ratio of the probability that the evidence would have been generated by the harmful sort of act to the probability that the evidence would have been generated by the benign sort—and it is impossible to state a ratio without regard to its denominator. *See* Kaplow (2014); *infra* section 4.2. As an illustration of the problem in the present context, Bolton,

explanations, it is impossible for evidence to bear on the probability of only one of them. More broadly, it is necessary to examine whether evidence—regarding recoupment or anything else—is more favorable to one hypothesis versus the other. Otherwise, one can be led badly astray. For example, if a patient has either bronchitis or pneumonia, a test result that is questionable regarding bronchitis may heavily favor that diagnosis if it almost surely rules out pneumonia.

A disciplined inquiry requires nontrivial specificity in order to know what information to gather and how it should be assessed. For simplicity, the exposition in this article usually considers cases with only two possible explanations. As will emerge, describing them as predation and no predation, or as anticompetitive and procompetitive, is insufficient. For anticompetitive predation, different theories have different implications for the evidence that would likely emerge and for how it should be interpreted. For alternative explanations to illegal predation, the possibilities vary greatly, enough to be the subject of the entirety of part 3. Until then, the benign explanation for alleged predation will be taken to be that the defendant’s pricing involved mere accommodation of rivals: pricing that maximized short-run profits on the assumption that pertinent rivals would remain in the market and would not in any sense be disciplined by the defendant’s pricing (although they will in general be influenced by it). As we will see in section 3.2, this statement is oversimplified.

2.2. Recoupment Condition

Consider the following expression—implicitly, in the confines of a simple model, the features of which will become apparent—of the statement that, in order for a predatory strategy to be profitable, the anticipated short-run profit sacrifice must be less than the discounted present value¹¹ of the expected boost to future profits:¹²

$$\delta^{pred} (\pi^{accom} - \pi^{pred}) < \delta^{monop} (\pi^{monop} - \pi^{accom}).$$

On the left side is the anticipated short-run profit sacrifice. The parenthetical term is the difference between the (expected) profits under a strategy of accommodation, π^{accom} , and under a strategy of predation, π^{pred} , each of which may be understood as corresponding to some common unit of time. This term is weighted by the factor δ^{pred} , which might be interpreted as the (expected) duration of the predation period.

On the right side is the expected long-run profit recovery (the amount “recouped”). The

Brodley, and Riordan (2000, 2262–85) advance a sequential decision rule for predatory pricing. Its fifth and final component is business justification, and the first such justification that the defendant might attempt to demonstrate at this stage is that its price reduction was defensive, involving “a price that maximizes the incumbent’s immediate or short-run profit even though its rival remains in the market”—what in the present article is referred to as accommodation. *See id.* at 2274–76. Their presentation sharply raises the question of what could have been the implicit competing hypothesis when implementing the first four steps in their framework.

¹¹In most of the exposition to follow, reference to discounting, expectations, and other features will be omitted and may be taken to be implicit (so, for example, references to the magnitude of the future profit recovery can be interpreted as its expected present value).

¹²*See, e.g.,* Ordover & Saloner (1989, 552–53). This expression and the corresponding simple model are restrictive (in failing to explicitly represent, for example, uncertainty about the degree of success and changes over time in what profits would be obtained both under accommodation and in the event of success), but it will be apparent that the main insights that will be drawn are fairly general.

parenthetical term here is the difference between the (expected) profits when such a strategy has succeeded, π^{monop} , and under a strategy of accommodation, π^{accom} , which increment is the per-period enhancement in profits due to predation. (The use of the term monopoly, with “monop” as the shorthand superscript, is for expositional convenience, it being understood that in general we are imagining a less competitive scenario than that under accommodation.) This latter term is weighted by the factor δ^{monop} , which incorporates a number of ingredients: a discount rate (the factor is lower if the firm more heavily discounts the future or if the recovery period does not commence for a longer period of time), a probability of success (the factor is higher when the probability is greater), the duration of success (the factor is higher when the enhancement is expected to last longer), and the breadth of impact (the factor is higher when a reputation will be established in more markets).¹³

A remarkable feature of most writing on recoupment, whether by courts, agencies, or commentators, is that little systematic attention has been given to the components of this basic condition. As will be discussed at various points in this article, many statements regarding recoupment are misleading or incorrect when one reflects on what the condition actually entails. Perhaps the most common fallacy is the implicit supposition that one often can assess whether the condition holds in settings in which the expected long-run profit recovery (the right side) is nontrivial (for example, even if entry is not difficult, it may not be instantaneous or sufficient to erode π^{monop} entirely)¹⁴ without estimating the magnitude of the anticipated short-run profit sacrifice (the left side). Many also imagine that recoupment can be determined without inquiring into the alleged predator’s costs even though, as will now be explained, they are a central determinant of the profit terms on both sides of the recoupment condition.¹⁵

Let us begin with the left side, the anticipated short-run profit sacrifice. In the parentheses, we have two profit terms, π^{accom} and π^{pred} . Each profit term is the difference between the pertinent revenues and costs. Revenues, in turn, are the product of a price and a quantity (taking the simple case of a single, fungible product sold at a uniform price). Therefore, for each profit term, we need to know the corresponding price, quantity, and costs (which will

¹³It may aid intuition to consider as well an alternative version involving a rearrangement of terms:

$$\pi^{accom} < \left(\frac{\delta^{pred}}{\delta^{pred} + \delta^{monop}} \right) \pi^{pred} + \left(\frac{\delta^{monop}}{\delta^{pred} + \delta^{monop}} \right) \pi^{monop} .$$

That is, the per-period profits from accommodation must be exceeded by a weighted average of the per-period profits when engaging in predation (which we might imagine to be negative) and the per-period profits from success.

¹⁴*Cf.* Leslie (2013, 1714–18) (criticizing courts’ tendency to believe that entry is much easier than it often is in practice). Note further that, under established doctrine in Sherman Act Section 2 cases, one does not confront the recoupment condition unless monopoly power (or, for attempted monopolization cases, a dangerous probability thereof) has been established, a setting in which truly negligible profit recovery would ordinarily seem to have been ruled out. Also, assessments of future entry often toggle inconsistently with whether post-predation prices will be significantly elevated (which is to say, conjectures of rapid and substantial entry often presuppose significant price elevation rather than its absence).

¹⁵Much of the analysis to follow also suggests that cost-based tests are even more difficult to apply than is appreciated. Notably, the relevant incremental costs require a counterfactual imputation of the quantity change, and the duration (which must be determined to assess the discount factor on the left side of the recoupment condition) is relevant to the very notion of incremental cost because which costs are variable rather than fixed depends on the time period under consideration.

depend on the quantity).¹⁶

For profits under accommodation, π^{accom} , we immediately confront the challenge that none of these components is observable. To elaborate, if we are attempting to test the hypothesis that what happened is predation, then by assumption accommodation did not occur. Accordingly, whatever might be directly observed (or determined through a detailed investigation) with respect to what actually transpired, that will not answer the question of what would have been the price, quantity, and resulting cost if instead the alleged predator had undertaken a strategy of accommodation.¹⁷

Sometimes this difficulty is sidestepped by essentially treating the price and quantity before entry as if they were those under accommodation, with the short-run sacrifice measured relative to that situation. However, in the simple setting in which a dominant firm drops its price in response to entry, the preexisting price and quantity are those associated with monopoly, not accommodation of entry. Accordingly, this method of imputation would overstate, perhaps greatly, the magnitude of the short-run profit sacrifice. Only if a firm had previously lowered its price to accommodate entry and subsequently shifted to a strategy of predation, lowering its price further, would the immediately pre-predation price and quantity be at accommodating levels.

In principle, the magnitudes of the components of π^{accom} can be inferred from other information: about market demand, the firm's cost curve, rivals' costs, capacity constraints, product attributes, and so forth. From that information, one can attempt to impute the short-run profit-maximizing price and quantity and then use that information to determine profits under accommodation, π^{accom} . Alternatively, as with much else, one could try to extract the pertinent information from the alleged predator, such as from review of its internal documents and depositions of its employees. More broadly, one would consider all potential sources of information and combine them to derive a best estimate, which will involve substantial uncertainty.

For profits under predation, π^{pred} , the analysis is similar: one needs to know the price, quantity, and cost. The key difference is that, under a maintained hypothesis that predation occurred, these values are in principle observable, although they—particularly costs—may be highly contested and difficult to extract.

The foregoing analysis, however, oversimplified in an important respect: the alleged predator will argue that its actual price, quantity, and costs were not predatory but rather accommodating, in which event it would advance alternative—and, in its view, counterfactual—estimates of the components of profits under predation. So, under either view, one of the two scenarios is counterfactual and requires imputation. Furthermore, if we could figure out which was which—that is, whether what we observed was predation (so we need to impute accommodation profits) or accommodation (so we need to impute predation profits)—we

¹⁶The analysis to follow elaborates on these components. Sometimes, however, it may be possible to establish some bounds with less information. For example, if a plaintiff claims that price was below cost by some amount, one might consider that deficit multiplied by the observed quantity (which is either a larger, predatory quantity or a smaller, accommodation quantity, as will be discussed) as a lower bound for the short-run profit sacrifice. As mentioned in note 48, such an approach can haunt plaintiffs that are overly aggressive in presenting high estimates of defendants' costs.

¹⁷This challenge—wherein it is disputed what in fact happened, and what is observed corresponds to the true facts under one of the explanations but not the other—is a central one to which the article frequently returns, particularly in section 2.3's discussion of triangulation and section 3.2's elaboration of the strategy of accommodation. Hemphill (2001, 1597) is among the few to have remarked on this problem.

would already be done. After all, the purpose of assessing the recoupment condition is to aid inferences about whether predation or accommodation took place. If answering that question was a prerequisite to the analysis of recoupment, we would be embarking on a circular journey. Our very uncertainty about characterization therefore greatly complexifies determination of the short-run profit sacrifice.

Let us reflect further on some aspects of the difference between profits under accommodation and predation: π^{accom} and π^{pred} . The quantity of output will be greater under predation. The smaller quantity associated with accommodation is produced in either scenario. Hence, that quantity's contribution to the profit difference does not depend on production costs but only on the difference in prices (although, as explained, this difference cannot be observed). The remainder of the difference in these profit terms will be due to the additional quantity supplied under the predatory strategy.¹⁸ That quantity increment will generate revenue per unit equal to the lower, allegedly predatory price, and raise total costs by the incremental cost¹⁹ of generating that quantity. Regarding this latter component, note that it requires determination of the short-run incremental cost of production over the quantity range involved in the predatory strategy. This observation undermines the view that one can assess recoupment, which in turn requires estimation of the short-run profit sacrifice, without confronting the problems of ascertaining the alleged predator's cost structure.

Yet another challenge must be met in assessing the left side of the recoupment condition: determination of the pertinent weighting factor, δ^{pred} . As noted, the central determinant is the expected duration of the predation phase. If one takes the ex ante view (on which, see section 4.3), then we have another component that is not observed, even if the alleged predation has run its course. The question is how long a rational predator in the defendant's position would have

¹⁸This aspect of the profit difference—and the concomitant need to assess the predator's costs to determine whether the recoupment condition is satisfied—is omitted in Elzinga & Mills (1989, 873–75). Their criterion (equation 1) uses the same quantity (for both the predation and recoupment periods) whether the firm engages in predation or not. Regarding the predation period, this assumption may be an over- or underestimate of the profit sacrifice, depending in significant part (but not entirely) on which of the two pertinent quantities is used (assuming that it is indeed one of those two rather than some other quantity). If the lower, accommodation quantity is employed (which would arise if using the observed quantity when accommodation in fact occurred), then the additional profit sacrifice attributable to the quantity expansion is omitted, although if the predation price is above cost for even part of that quantity range, the profit sacrifice would be overstated to that extent. If the higher, predation quantity is employed (which would arise if using the observed quantity when predation in fact occurred), then the sacrifice would be overstated because the quantity expansion (assumed not to be short-run profit maximizing, as under accommodation) would be treated as if it could have been sold at the higher, accommodating price. (There would, however, be understatement to the extent that some of the additional units had an incremental cost above the higher, accommodating price.) Similar considerations apply to estimation of the long-run profit recovery under the assumption of common quantities (although, as explained in the text to follow, which of the two quantities in that period is greater will depend on the circumstances).

Note further that even the use of a common quantity does not escape the need to analyze the alleged predator's cost structure. As the text emphasizes, because one of the two scenarios being compared is counterfactual, the price in the unobserved scenario must be imputed, and such imputation will depend on the firm's costs. Moreover, an attempt to infer *which* of the two scenarios is being observed—precisely the central dispute—depends on costs. Relatedly, which of the two quantities is the one implicitly being used in any shortcut for estimation depends on costs, so whether the shorthand over- or underestimates, say, the short-run profit sacrifice will depend on estimated costs even if costs are not used in the computation because it takes quantity to be constant.

¹⁹Various authors use terms such as variable cost, avoidable cost, incremental cost, and marginal cost to refer to the magnitude in question. Sometimes different notions are intended and sometimes not. And sometimes it might be supposed that average cost would be used as a proxy. The present discussion abstracts from these concerns in order to present the core ideas as simply as possible.

anticipated to be necessary in order to drive out (or otherwise discipline) the rival. If this period would be sufficiently short (say, a rational rival would be expected to exit immediately), then the expected short-run profit sacrifice is negligible even if the difference between the two profit terms is large. The recoupment condition would be undemanding. If sufficiently long, then the sacrifice could be very large even if the difference between the profit terms is modest, so the recoupment condition would be highly demanding.²⁰ In order to understand which case was apt, one would have to develop further the anticompetitive explanation of predation in the context at hand, drawing on the modern economics literature on predatory pricing, the subject of section 4.1. Unfortunately, as we will see there, most work does not develop models or provide empirical evidence on this crucial question. Another important source of information, as with the profit terms, is internal evidence on the firm's own strategic analysis in making its pricing decision.

Now let us move to the right side of the recoupment condition, the expected long-run profit recovery. Similar challenges are present. Again, we have the difference between two profit terms, π^{monop} and π^{accom} . The latter has already been considered (although it is possible that the accommodating prices and quantities, and hence profits, change over time, so the values could differ). The former profit term requires determining the monopoly price and quantity, and corresponding cost, after predation (including how it may change, perhaps gradually erode, over time). Both profit terms, and their underlying components, may require imputations²¹—from market demand and cost curves, and other information—and will undoubtedly be contested. If the predation has run its course, it may be disputed how successful it was or if what occurred was indeed predation, so whether any observed price and quantity are the monopoly ones and how what we observe bears on the proper imputation of the alternative scenario must be determined, one way or another.

We can, as with the left side, consider how these profit terms differ from each other. With respect to the quantity that would be sold under both successful predation and accommodation, the profit difference will reflect the price difference. And with respect to the quantity difference between the two situations, one would, in the scenario with the greater quantity, consider the difference between the price charged and the contribution of that quantity difference to costs. Once again, this requires knowledge of the firm's cost structure. Furthermore, because we may be considering a different overall duration than with the predation period, often imagined to be a significantly longer one, the relevant time frame for assessing costs may differ as well (fewer costs may be fixed).

Note that, unlike with the predation period, it is ambiguous which scenario involves the greater quantity. The reason is that, on one hand, successful predation leading to monopoly would involve a higher market price and hence a lower market quantity, but, on the other hand, the dominant firm would have all the sales rather than only a portion of them. Hence, it will depend on the context which quantity would be larger.

The right side also has the weighting factor δ^{monop} . As mentioned, this factor incorporates

²⁰There is an interdependency in that a steeper price cut, generating a larger per-period profit sacrifice, might raise the probability of a speedier exit.

²¹The monopoly scenario would not require imputation when it involved restoring, say, a pre-entry situation. Even if some circumstances have changed over time, the necessary assessment may be eased if the resulting conditions are similar to ones that existed in the recent past.

the alleged predator's discount rate, the probability of success, the duration of success (rate of erosion, perhaps due to entry²²), and the breadth of impact (for example, if a reputation might be established in multiple markets). If this weight is high, the long-run profit recovery will be large even if the difference in the profit terms is modest, and if the weight is small, the recovery will be modest even if the difference in the profit terms is large. If an ex ante view is taken, one will need to assess how these factors would have appeared to the alleged predator at the time it determined its strategy. If one limits the analysis to an ex post perspective and, moreover, waits until any possible effects of predation on subsequent profits have run their course, one would rely on what actually happened, albeit relative to a counterfactual scenario.

Having examined the components on each side of the recoupment condition—some of which require imputations for counterfactual scenarios and knowledge of the alleged predator's cost structure—we can see how demanding it is to determine how likely or clearly the condition is to be met. Compounding the problem is that an agency or tribunal is attempting to use limited information to reconstruct a complex decision-making process by an alleged predator that—if actually contemplating various alternative strategies—was itself significantly uncertain about much of the terrain, including many of the components of the recoupment condition.

It is important to keep in mind, however, that sometimes it may be obvious whether or not recoupment is plausible, and that, even when it is not, other aspects of predatory pricing analysis are highly challenging as well. Indeed, this latter point is a significant motivation for examining the recoupment condition in the first place. How these uncertainties interact is the subject of the next section and much of part 3.

2.3. Triangulation

Having stated the decision framework in section 2.1 and examined the challenges involved in assessing the recoupment condition in section 2.2, this section discusses the logic and processes of inference that are appropriate in settings in which determination of whether the recoupment condition is satisfied is diagnostic with respect to the classification of alleged predation. Questions concerning when, why, and how recoupment is actually diagnostic are deferred until part 3.

For now, suppose that the only relevant competing hypothesis to illegal predation is the accommodation of rivals and that the recoupment condition is indeed diagnostic in the fashion ordinarily supposed. That is, recoupment is understood to be a necessary condition for illegal predation—the requisite short-run profit sacrifice is rational if and only if there would be sufficient long-run profit recovery—but is unnecessary for accommodation—there being no short-run sacrifice that needs to be recovered. In particular, this section will address varying degrees of proof, and hence confidence, with regard to analysis of the act itself (say, all evidence bearing on whether the alleged pricing is predatory versus accommodating, without consideration of recoupment) and with regard to whether the recoupment condition is met.

Begin with the familiar logic. If a rational, profit-maximizing firm is engaging in something that actually constitutes predatory pricing, then it must expect, ex ante, to boost its future earnings enough, relative to what they otherwise would have been, to recover (on a

²²An important factor that may influence the rate of erosion is the extent to which the predation itself serves as a strategic barrier to entry.

discounted basis) at least its short-run profit sacrifice, that is, to recoup. In short: $PP \Rightarrow R$. (“PP” refers to predatory pricing being the true explanation for the observed behavior, “ \Rightarrow ” is the logical “implies” symbol, and “R” refers to recoupment being true, which is to say, the recoupment condition being satisfied.) Therefore, as a matter of simple logic, if we know that recoupment could not have been rationally anticipated, we know that our presumed-to-be profit-maximizing firm must not have been engaging in predatory pricing: $\sim R \Rightarrow \sim PP$. (“ \sim ” is the logical negation symbol.)

This logic indicates that one way to help determine whether PP is true is to determine whether R is true. If R is false, i.e., $\sim R$, then we know PP is false, i.e., $\sim PP$. The fact that R is a necessary condition for PP, so that $\sim R$ is a sufficient condition for $\sim PP$, does not tell us whether PP is true when R is in fact true. (I.e., it is not the case that $R \Rightarrow PP$, notably because profitable predation may be deterred.²³) Therefore, inquiries into R constitute a means of eliminating PP claims but not of confirming them. (Of course, as a matter of Bayesian reasoning, if we begin with uncertainty over whether PP and R are true, and we resolve the uncertainty about R and conclude that R is true, this produces Bayesian updating of the probability that PP is true in an upward direction, having ruled out a subset of the cases in which PP is false but none in which PP is true.²⁴)

This logic underlies some arguments in the predatory pricing literature and cases. On one hand, it directly corresponds the familiar point that recoupment is indeed a necessary condition for predation, which is the source of the so-called recoupment requirement. On the other hand, this logic also directly supports the argument (suggested, for example, in the *Brooke Group* dissent²⁵) that, if we know that PP is true, we should infer from that very conclusion that R must be true. It also appears to present a conundrum, suggested, for example, by aspects of the *Brooke Group* majority opinion:²⁶ what are we to make of cases in which both PP is true and R is false? Since $PP \Rightarrow R$, should we override the conclusion of $\sim R$, finding liability? Or, since $\sim R \Rightarrow \sim PP$, should we override the conclusion of PP, finding no liability? Or do we suspend the laws of logic and engage in some other sort of “reasoning”? This fairly obvious tension—perhaps hidden by focusing on one of the two strands in isolation, at the expense of the other—has received

²³One could incorporate expected sanctions (a key feature omitted from most analysis of predation; *see infra* section 4.1) into the profitability condition: the anticipated short-run profit sacrifice would have to be exceeded by the expected long-run profit recovery, which itself would subtract expected sanctions—a more demanding recoupment condition. Thus modified, there would be a stronger inference from R to PP because then, when R is true, PP would be profitable, all things considered, so an imputation of profit maximization implies that the firm would have chosen to engage in predation. (Among other reservations, one might be worried that alternative investments would have been even more profitable than predation, but properly understood, the opportunity cost of funds to the firm would already be reflected in the discount rates.)

²⁴As elaborated in section 4.2, however, Bayesian posterior probabilities are not strictly relevant under the appropriate approach to the optimal determination of liability in this setting, which is concerned with the provision of incentives rather than dictating the actions of parties before the tribunal. Nevertheless, similar reasoning would apply.

²⁵*See Brooke Grp. Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 258 (1993) (Stevens, J., dissenting); *cf. Barry Wright Corp. v. ITT Grinnell Corp.*, 724 F.2d 227, 232 (1st Cir. 1983) (Breyer, J.) (explaining that the intuitive idea behind the price-cost test is that, absent other explanations, one can infer that the firm plans to raise the price in the future).

²⁶This version is largely implicit but is strongly suggested by the majority accepting for purposes of the appeal the jury’s finding that the defendant engaged in below-cost pricing, satisfying the legal test for predation, yet questioning and ultimately rejecting that any reasonable decision-maker (presumably including the firm itself) could have plausibly believed that recoupment was feasible. *See Brooke Group*, 509 U.S. at 218–19, 231, 242–43.

remarkably little attention.²⁷

The solution to this apparent puzzle begins with a recognition of uncertainty. In particular, there is often significant uncertainty concerning both PP and R. Great uncertainty in the determination of whether a defendant's pricing is actually predatory is understood to be posed by the use of cost-based tests that necessitate difficult inquiries into cost. Indeed, this concern is a central justification for inquiring into recoupment in the first place. And section 2.2 reveals that, on reflection, assessing recoupment is often quite difficult—in part, again, because of the difficulty in assessing cost, but for other reasons as well. Once one has disposed of easy cases in which it seems fairly clear that predation did not occur, whether through direct inquiry or examination of the recoupment condition, we are left with the more serious cases in which there is a nontrivial probability of predation and recoupment.

It is helpful to consider some particular possibilities. If we are significantly uncertain about PP but nearly certain that R fails (i.e., $\sim R$), then the logic of $\sim R \Rightarrow \sim PP$ indeed provides a basis for finding no liability. If instead we are significantly uncertain about R but nearly certain that PP is true, then the logic of $PP \Rightarrow R$ favors liability.²⁸

In these instances and more broadly, the correct process is one of triangulation: reasoning from all of the evidence toward an overall conclusion.²⁹ Recoupment logic is but one consideration in this process.³⁰ For example, one would naturally examine conditions of demand, which in turn would bear on whether an observed price might be inferred to be predatory, how likely it is that the price charged would drive out a rival, and what were the magnitudes of various of the profit terms in the recoupment condition. Different estimates of aspects of demand might simultaneously adjust one's conclusions on all of these dimensions. Perhaps some would point toward predation and others toward accommodation.

This idea is also important with respect to cost conditions. For example, if a defendant's costs are lower, a given short-run price is less likely to be predatory, the viability of current rivals is lower, the prospect of subsequent entry is also lower, and (partly related to the foregoing) all of the profit terms in the recoupment condition will differ. Rather clearly, differences in cost estimates have multiple and partly conflicting implications for the likelihood that the defendant's pricing involved predation rather than accommodation.

Regardless of the nature of the evidence under consideration, note that, when engaging in triangulation, we are interested not only in the likelihood that the recoupment condition is satisfied but also in the degree to which this may be so. Recoupment, as viewed by the firm *ex ante*, ordinarily involves an uncertain prospect, and a further layer of uncertainty is added when an agency or a tribunal attempts to replicate *ex post* the firm's *ex ante*, probabilistic calculus. For these reasons and others, the magnitude of expected recoupment will bear positively on the

²⁷A further tension, elaborated in section 3.2, concerns the point that a significant reason that the recoupment condition might fail is that the short-run profit sacrifice (the left side of the inequality) is large, but the very existence of a short-run sacrifice is evidence of predation rather than accommodation.

²⁸Each of these examples comes in varying strengths. For example, if we are fairly certain that PP is true, but supremely confident that R fails, we should conclude that the probability that PP is true is low.

²⁹That recoupment's proper role involves triangulation is not itself unfamiliar, but prior elaboration of the process has been fairly limited. *See, e.g.,* Areeda & Hovenkamp (2015, 51–53).

³⁰A key point in this respect is that, as part 3 emphasizes, the actual relationship between PP and R is different from what is commonly supposed (and taken in this section to be true); hence, the manner in which triangulation should be undertaken with regard to recoupment is more varied and subtle than meets the eye.

likelihood that a defendant's observed pricing was predatory rather than accommodating.³¹

It is useful to keep in mind that recoupment is a derivative inquiry: We are not independently interested in satisfaction of the recoupment condition in reaching an overall decision on liability.³² Rather, recoupment analysis is relevant only because of how it bears on the key determinants of liability, here the emphasis being on classification. It follows that there is no logical basis for an independent recoupment requirement as such and, relatedly, no associated probability threshold with respect to recoupment in isolation.³³ In the earlier illustration in which the evidence indicated that PP was quite likely to be true, even substantial uncertainty about R, to the point of doubting it significantly, did not disrupt the conclusion that PP was likely, as long as the confidence with respect to PP was sufficiently high by comparison to the magnitude of our doubts about R. Likewise, even if our recoupment condition holds with certainty, that finding may not much boost an otherwise negative finding on PP, here because R is a necessary but not sufficient condition for PP (as mentioned, because the prospect of liability might deter predation). We care directly only about this ultimate conclusion regarding classification, not particular intermediate findings we may have made along the way. This point will be magnified by the analysis in part 3, which reveals recoupment's actual relevance to be more varied and subtle than assumed here.

2.4. Error Costs

Section 2.3, like much of this article, focuses on the classification of acts as anti- or procompetitive. However, as the framework in section 2.1 emphasizes, magnitudes are important as well. This point is familiar from simple decision theory. In the medical treatment setting, a twenty percent probability of a disease being present would be easily sufficient to justify treatment if the benefit, conditional on the disease being present, was ten times as great as the harm (due to side-effects) if it was not. But an eighty percent probability would be clearly insufficient if the harm from mistaken treatment was ten times greater than the benefit of correct treatment.

Returning to the problem of when to assign liability for predatory pricing, it is usually ignored that both the benefits of correct imposition of liability and costs of mistaken imposition of liability can each vary (often independently) by large amounts. In this section, we consider whether recoupment analysis in particular may bear on these magnitudes. Note that, to the extent that the answer is affirmative, this means that recoupment analysis can be relevant to liability even in cases in which satisfaction of the recoupment condition is uncontested. As long as classification is disputed (but not necessarily because of doubts about recoupment), there is a risk

³¹Naturally, what matters to a profit-maximizing firm is not the probability of recoupment in isolation but whether the overall expected gain (adjusted for risk, as appropriate, and perhaps discounting for proponents' potentially excessive enthusiasm) is positive.

³²Indeed, when using the logic $PP \Rightarrow R$, the finding on R is doing no work in the sense that our conclusion regarding the high likelihood of PP is not in any way boosted by the fact that this very conclusion leads us to believe that R must be quite likely as a consequence.

³³This point leads directly to the argument that, as a matter of logic and policy if not intent or interpretation, the recoupment "requirement" that many associate with *Brooke Group* (which the Court itself called a "prerequisite") is better viewed as a factor than as an independent element, and that statements in that case, as well as in *Matsushita*, that predation can only be rational with the expectation of recoupment are consistent with this view.

of error, and an optimal liability determination depends on the magnitude of the benefits and costs of different outcomes; hence, anything (including recoupment) that bears on these magnitudes is relevant. As was true in section 2.3, what matters here is not the probability that the recoupment condition is satisfied but rather how the analysis of recoupment bears on the direct determinants of the optimality of assigning liability. To the extent that, as will be explained, the recoupment condition—as a whole or examining each side separately—is indicative of these magnitudes but does not use the underlying information to measure them in the most direct way, it would not make sense to conduct recoupment analysis as such. The key takeaway in this respect is that many aspects of recoupment analysis have fairly direct relevance to these magnitudes.

As the literature on predatory pricing has occasionally recognized, there is a connection between recoupment and the magnitude of harm that predatory pricing would cause (*see, e.g.*, Joskow & Klevorick 1979, 225 n.33, 227–28, 235–36). The right side of the recoupment condition in section 2.2 represents a predator’s expected profit recovery from predatory pricing. The greater the expected recovery, all else equal, the more likely is the recoupment condition to hold (and, if it does, by a greater margin, which is also relevant to classification, as explained in section 2.3). But greater gains derive from greater monopoly profits. The term in parentheses on the right side, recall, is the difference between the monopoly (really, elevated) level of profits in the event of success and the level of profits if instead a (more competitive) strategy of accommodation had been followed. Moreover, the weighting factor on the right side reflects a number of factors that similarly bear not only on profits but also on harm, including the expected duration (or rate of decay) of supracompetitive profits and the number of markets in which they are likely to be reaped.

Although monopoly profit is not the definition of harm under most views of the objectives of competition law,³⁴ the degree of profits from an anticompetitive act is positively related to harm. Under a consumer surplus standard, the higher the price, the longer it is elevated, and the more markets in which price is elevated, the greater will be the loss. However, the relationship between profits and lost consumer surplus is not linear—for example, the last bit of price increase generates negligible profits but nontrivially reduces surplus—but typically there is a positive relationship in the relevant range.³⁵ Under a total welfare standard, there is also a positive but (a different) nonlinear relationship between the degree of monopoly profit and welfare loss (in this case, deadweight loss).

Next, examine the left side of the recoupment condition. The degree of short-term profit sacrifice required for predation to be successful will depend on such factors as firms’ cost structures and the nature of information asymmetries, as elaborated in section 4.1. Here again,

³⁴A total welfare standard is conventional in welfare economics and is associated with ordinary cost-benefit analysis. Its generic justification against distributive objections sometimes offered to support a consumer welfare standard is that distributive concerns tend to be most efficiently addressed directly, via taxes and transfers. *See, e.g.*, Kaplow (2004; 2008, chs. 2, 6, 8); Kaplow & Shavell (1994). For elaboration with regard to competition policy, see Kaplow (2012b, 7–18; Kaplow 2018a), and with respect to predatory pricing in particular, see Edlin (2012, 160–64). The present article is agnostic.

³⁵In general, a higher price, a greater duration, and a greater number of markets that each contribute a unit to the predator’s profits will cause differential losses in consumer surplus—and, anticipating the next point in the text, (other) differential losses in total surplus. That is, the right side of the recoupment condition is suggestive of the degree of harm from predatory pricing but not directly a measure of that harm.

there is some tendency for this measure to relate to welfare effects, but the relationship is less straightforward. If the goal is taken to be consumer welfare, a greater required profit sacrifice is advantageous for the familiar reason that consumers benefit from the price reduction in the predation phase. Therefore, to the extent that recoupment is more likely because the left side is lower, consumers' gains from predation are smaller, making predation's net harm greater. That is, satisfaction of the recoupment condition in this respect also favors liability when considering the magnitude of harm conditional on predation having occurred. By contrast, a greater profit sacrifice also (familarly) may reduce total welfare to the extent that part of the sacrifice is from below-marginal-cost pricing and hence the inefficient production of units that generate less consumer gain than their resource cost. If total welfare is the objective, therefore, a greater likelihood of recoupment because of a low short-run profit sacrifice may be associated with less net harm from predation, making liability less attractive, all else equal.³⁶

Examining both sides of the recoupment condition together can be interesting as well. Suppose that the condition barely holds, but that in one case both sides of the inequality are large and in a second case both sides are small. If we compare the former case to the latter from a consumer welfare perspective, we have a larger loss due to the right side but a larger gain due to the left side. Recalling that the relationship between firm profits and consumer surplus is nonlinear and considering as well that different contributors to profits can influence consumer surplus differentially, it is not obvious whether the total loss in consumer surplus is greater in one case or the other.³⁷ But from a total welfare perspective, the former case involves a larger loss associated with both sides of the recoupment condition, so the welfare cost of predation is unambiguously larger.

The foregoing addresses how recoupment analysis bears on the harm associated with actual predation and hence the magnitude of the benefit of assigning liability conditional on the classification of predation being correct. It is also appropriate to consider how satisfaction of the recoupment condition might bear on the magnitude of the loss from the mistaken imposition of liability, which is to say, the magnitude of chilling effects. The focus of section 3.5 is on how the harm associated with false positives varies, quantitatively and qualitatively (including that this

³⁶Although many embrace the consumer welfare objective for antitrust, it is interesting that, with respect to exclusionary practices and predatory pricing in particular, some of the same commentators also advance legal tests aimed to protect only more efficient rivals, even at the expense of consumer surplus. That is, under some views, the law is not supposed to aid the survival of less efficient rivals that nevertheless temper the dominant firm's pricing, which in turn would raise consumer surplus. Indeed, such enablement would sometimes raise total surplus as well because, despite the resulting inefficiency in production, the gain to consumer surplus could be greater. It is not just total welfare rather than consumer surplus that is implicitly advanced by such policies, but production efficiency at the expense of consumer welfare and possibly total welfare as well—an implicit objective quite at odds with consumer welfare. *See* Edlin (2012, 160–64); Kaplow & Shapiro (2007, 1193, 1199). Of course, stringent cost-based predation tests can readily be advanced on consumer or total welfare grounds, with the inclination to err on the side of exoneration being motivated by a belief that more seemingly balanced tests would encourage a flood of litigation and generate costly false positives.

³⁷From the perspective of consumer surplus, when recoupment holds (or fails) by modest amounts, the sign of the net effect on consumers is ambiguous, whereas if the condition holds by a large enough magnitude, the consumer gain associated with the predation period will be outweighed by the consumer loss during the profit recovery period, and conversely if the condition fails by a sufficient amount. An alternative view regarding the appropriate objective is advanced in Leslie (2013, 1742), who argues that predation should be regarded to harm consumers even if their gain in the predation period exceeds their loss in the recovery period because the two groups of consumers need not be the same (a view that would deem, for example, a product upgrade to be harmful to consumers despite any degree of overall gain if some consumers preferred the former version of the product, which is no longer offered).

harm can be negative, that is, a benefit) across competing explanations for allegedly predatory behavior. As a consequence, there is nothing approaching a one-size-fits-all answer to the present question. Nevertheless, a few remarks are in order here.

When easier recoupment is associated with conditions being less competitive, there would be a tendency for the chilling of otherwise competitive price reductions to be more detrimental. That is, clearer satisfaction of the recoupment condition may imply that the cost of mistaken assignment of liability is greater, which disfavors liability. This point may be more apparent when contemplating the opposite situation. Suppose that recoupment is dubious because entry by efficient potential rivals is thought to be easy, despite fears they may have about predation. The prospect of chilling price reductions of seeming predators in such situations may not have high social costs because market prices would not remain significantly elevated due precisely to the prospect of such entry. As will be explored below, however, this possibility does not cover the full domain but rather depends on the nature of what might be chilled—that is, on the competing explanation for the allegedly predatory pricing.

3. COMPETING EXPLANATIONS

In part 2, the competing explanation to the hypothesis of predation was taken to be the accommodation of rivals. In addition, section 2.3 on triangulation, which focused on classification, just assumed that the recoupment condition was diagnostic in a straightforward manner. We will now see that this framing of the problem, which follows conventional understanding, oversimplifies greatly. Even though satisfaction of the recoupment condition is necessary for predation to be rational, whether the recoupment condition is satisfied does not directly distinguish some key competing explanations because they too require recoupment. Furthermore, the diagnosticity of recoupment with respect to all explanations is much more subtle than is generally appreciated (and was assumed above). This part reveals a surprisingly large gap in understanding with respect to when and how recoupment analysis is useful.

Until section 3.5, attention is confined to classification. Section 3.1 begins with explanations for pricing that appears to be predatory but actually involves procompetitive investment, such as the promotion of new products. Because such competing explanations likewise require recoupment, the condition is not directly diagnostic; indeed, easier recoupment can disfavor liability. Section 3.2 revisits the possibility that the challenged pricing involves the accommodation of rivals. Here, recoupment is diagnostic, as supposed in part 2, but the proper analysis is notably more complex; some evidence disfavoring recoupment favors liability. Section 3.3 examines how recoupment may help distinguish between illegal and legal predatory pricing—the latter arising under cost-based tests that exonerate some price cuts that are predatory in important respects. Legal predation also requires recoupment, but the recoupment condition may nevertheless be diagnostic, albeit in subtle ways. Section 3.4 examines other explanations, notably those that implicitly question the wisdom of the alleged predator's price cut. Although imputing irrationality directly contradicts the conventional logic behind the recoupment inquiry, such explanations, paradoxically, appear to be necessary to make sense of much analysis of recoupment by courts and commentators alike. Section 3.5 closes by considering further the role of false positives in predatory pricing analysis. Both the magnitude and the character of chilling costs depend greatly on the particular competing explanation for the allegedly illegal predatory

pricing, making specification of the alternative hypothesis all the more important.

3.1. Procompetitive Investments

This section examines explanations for seemingly predatory prices that, like actual predation, entail a short-run sacrifice but nevertheless involve procompetitive investments of sorts. Low up-front prices are purportedly justified by long-run enhancements to efficiency and corresponding benefits to consumers. As will now be explained, these alternative explanations, like predatory pricing, presuppose recoupment.³⁸ As a consequence, examination of whether the recoupment condition is satisfied will not be diagnostic in a straightforward fashion regarding whether the anticompetitive or procompetitive explanation is correct in the case at hand. (For purposes of this article, the alternative explanations considered in this section will simply be assumed to be procompetitive, although this supposition is contestable.³⁹)

Sometimes price reductions are defended on the ground that they are promotional. Prices might be very low, for example, to facilitate the efforts of a dominant firm in one market to penetrate other markets or to enable a rising firm to become a major player in a new industry. In such cases, the requisite short-run profit sacrifice makes sense only if the firm expects to generate positive margins in the future. Another strategy that employs low prices that generate a short-run profit sacrifice is the early production of a greater quantity of output in order to move more rapidly down a learning curve.⁴⁰ Once again, such a strategy can be rational only if the firm expects, as a consequence, to earn greater profits in the future.

Such strategies are hardly fanciful for dominant firms. Variants of these explanations might be apropos, for example, when Amazon, Uber, or Walmart enters new geographic or product markets or when technology firms incur significant losses for years when establishing themselves in a new market. High market capitalizations despite not having yet turned a profit indicate that investors believe that substantial positive margins will be earned in the future on a significant sales base for an extended period of time. Moreover, predatory pricing allegations have arisen in such settings—that is, when such procompetitive explanations may plausibly be

³⁸This section does not consider the alternative explanation under which allegedly predatory prices, by raising quantity, enhance demand for the alleged predator's complementary products that are sold at positive margins and hence generate more present profits than any profit sacrifice on the product in question. In this instance, there is no short-run profit sacrifice that requires future profit recovery. Put another way, such pricing can be seen as accommodation (which suggests that the challenge of identifying the accommodation benchmark is sometimes even more challenging than suggested in sections 2.2 and 3.2). *Cf.* Johnson (2017) (analyzing larger firms' loss leader strategies aimed to attract buyers who will purchase other products).

³⁹For example, when learning-by-doing is important, to the extent that a dominant firm's lower short-run prices lead it to make additional sales, its own costs will fall but those of rivals, if subject to a similar learning curve, will accordingly rise since their output is reduced; we thus have a strategy that raises rivals' costs while lowering, not raising, one's own costs. *See* Besanko, Doraszelski & Kryukov (2014); Cabral & Riordan (1997); Spence (1981); *see also* Benkard (2004). Similar questions may be raised about low prices involving a short-run profit sacrifice designed to build market share in a network industry with switching costs, where (again) gains to the alleged predator are associated with disadvantages to its rivals. *See* Farrell & Katz (2005).

⁴⁰Note that, when greater present production reduces future costs, narrowly defined marginal cost may exceed price whereas a conceptually more complete notion of marginal cost would subtract the future savings and hence is lower than what conventional accounting may suggest. *See* Spence (1981).

offered by defendants.⁴¹

The key point for present purposes is that such procompetitive strategies, like an anticompetitive predatory pricing strategy, are profitable and hence rational if and only if a recoupment condition like that presented in section 2.2 is satisfied. Indeed, it is essentially the same condition in qualitative terms. The accommodation profit, π^{accom} , is just a label for the profit from abstention (whether from predation, promotion, or moving down a learning curve). The π^{pred} term can be interpreted as the present profit when the strategy in question (whatever strategy) is adopted—we could simply change the label to π^{prom} or π^{learn} . And π^{monop} can be understood as the future profit flow when the strategy has had its effect of boosting margins—change the label to π^{return} or $\pi^{recover}$. And likewise for the two weights, δ^{pred} and δ^{monop} .

Accordingly, the left side of the recoupment condition, the so-called profit sacrifice, can be understood as just the cost of some investment undertaken in the present, and the right side is just the return from the investment. Our condition simply reflects that any investment—that is, any strategy with up-front costs and subsequent returns—needs to be profitable in order for a rational firm to be willing to undertake it. On its face, therefore, this condition does not discriminate between anti- and procompetitive strategies when both involve investments.

A recoupment inquiry might nevertheless be diagnostic, but in subtle ways and not necessarily in the familiar direction. The procompetitive strategy might require greater profit recovery than the anticompetitive one does because, for example, product promotion or moving down a learning curve could require years of profit sacrifice whereas predation in some contexts might be expected to succeed quickly.⁴² The broader explanation for this residual diagnosticity is simply that, even though the recoupment *formulas* have analogous terms for predation and for this type of procompetitive explanation, the *magnitudes* of the terms in general differ. Hence, analysis of recoupment might reveal that the condition plausibly holds for one of the competing explanations but not for the other.

From the beginning, economists, commentators, and courts have understood that a rational predator's strategy involves an investment, with a short-run cost incurred in order to generate a greater payoff in the future.⁴³ What has not been appreciated, however, is that some of the alternative explanations for what may appear to be predatory behavior likewise involve investments. The recoupment question asks, in essence: Is this a setting in which an investment

⁴¹See, e.g., *Wal-Mart Stores, Inc. v. American Drugs, Inc.*, 891 S.W.2d 30 (Ark. 1995); *Desoto Cab Co. v. Uber Tech. Inc.*, 3:16-cv-06383 (N.D. Cal. 2016) (complaint filed).

⁴²Rapid, successful predation may have occurred, for example, in *Spirit Airlines, Inc. v. Northwest Airlines, Inc.*, 431 F.3d 917 (6th Cir. 2005). Regarding the profit recovery period, entrants may have more difficulty competing with a firm that has long promoted its product and now benefits from substantial loyalty than with a predator. On the other hand, the strategic entry barrier erected by predation could be powerful whereas promotion may not be very long-lasting in keeping future entrants at bay. More broadly, the best means of distinguishing these procompetitive explanations from a predatory one often will be unrelated to this profitability constraint. Notably, product promotion and learning curve phenomena tend to be associated with new products or production technologies, whereas predation may arise with established products and technologies but in a multimarket setting. See, e.g., U.S. DOJ (2008, 71); Easley, Masson & Reynolds (1985, 455 n.9). Nevertheless, overlap between procompetitive investment and predation is entirely possible. When an established firm enters a new market inhabited by small, initial innovators, and the firm charges very low prices, it may not be readily apparent whether it is engaging in promotion, moving down its learning curve, predation, or some combination. Nor is it the case that only new firms move down learning curves: consider Intel and Moore's law.

⁴³See, e.g., *Matsushita Elec. Industrial Co. v. Zenith Radio*, 475 U.S. 574, 588–89 (1986); *Areeda & Hovenkamp* (2015, 47–48); *Bork* (1978, 145); *Ordovery & Saloner* (1989, 552–53).

would make sense? When both competing explanations are investments, analysis aimed at answering this question in a yes-or-no fashion is not well suited to distinguishing the two explanations. This conclusion illustrates one of the key teachings of section 2.1: a proper framing of the liability decision involves explicit articulation of both anti- and procompetitive explanations because classification efforts are properly understood as comparative.

3.2. Accommodation of Rivals

We now return to the competing explanation that the alleged predator's low pricing reflects not predation but rather the accommodation of rivals. This section reexamines the relationship between accommodation and the recoupment condition, which most analysts take for granted and assume operates in a straightforward manner.⁴⁴

To fix thinking, it is helpful to begin by recalling that the accommodating price response to new entry may well entail a significant price reduction because of the altered competitive context, even when the resulting lower price maximizes short-run profits and does not aim to drive out or otherwise discipline rivals. The pertinent short-run profit sacrifice involved with predation is understood here to be relative to that benchmark.⁴⁵ Furthermore, there is the additional possibility (the analysis of which is deferred to section 3.3) of legal predation: price cuts designed to discipline or eliminate rivals that, for various reasons of legal policy (and often embodied in cost-based tests), do not give rise to liability. These price reductions have in common with accommodation that they are legal, and they are also not designed to produce the sorts of investment benefits examined in section 3.1. But such price cuts differ in that accommodation by definition involves no short-run profit sacrifice that requires recoupment whereas legal predation does. As we will see in this section and the next, examination of the recoupment condition may be relevant to classification for these two types of alternative explanations for alleged illegal predatory pricing, but the connection is notably more complex and subtle than meets the eye and, importantly, the relationship differs for the two explanations.

To begin the analysis, let us revisit a price (reduction) that merely accommodates rivals. Because under our definition of accommodation this is the short-run profit-maximizing price, there is no short-run profit sacrifice, so no profit recovery is necessary. Accordingly, a finding that no significant profit recovery is feasible is consistent with this explanation. That finding is

⁴⁴An exception is Hemphill (2001, 1592–93).

⁴⁵To illustrate, consider a dominant firm that faces a choice between two short-run prices. The first maximizes short-run profits, which we will suppose does not have the effect of eliminating or disciplining rivals, present or future—which is why this price is described as involving accommodation. (It is possible, however, that the short-run profit-maximizing price is itself low enough to eliminate or discipline rivals, in which case it may more aptly be labeled as predatory. An “accommodating” price would be higher than that which maximizes short-run profits in this instance.) The second price is that which is part of a strategy that maximizes long-run profits. This price, taken to be lower, involves a short-run profit sacrifice (by assumption, since the aforementioned higher price is that which maximizes short-run profits), but nevertheless maximizes long-run profits because of the effect on rivals, which enables the firm to earn greater profits in the future and to a sufficient degree to recover its short-run losses.

This depiction oversimplifies in a number of respects. For example, it may well be—with regard to the lower, long-run profit-maximizing price—that whether rivals are disciplined is probabilistic (viewed *ex ante*), with the probability rising as the short-run price is reduced further. In addition, a dominant firm concerned about liability for predation may moderate its price reduction relative to the (unconstrained) long-run profit-maximizing price, giving up some expected profit from successful predation in order to avoid a greater expected cost from liability.

also inconsistent with illegal predation (and, as we have seen, with some other explanations for what may appear to be a predatory price). The combination of these points is why a failure to satisfy the recoupment condition is seen as opposing the classification of a defendant's pricing as predatory and thereby favoring exoneration. However, the matter is not so simple.

First, observe that at least some long-run profit recovery is often plausible. Even if rivals would be eliminated only for a while or merely moderately restrained by a predatory episode, the right side of our recoupment condition would be positive. In cases that are not frivolous, this will often be true. Consider as well that, under current doctrine, significant market power is required in Sherman Act Section 2 predation cases, even apart from any recoupment condition, which likewise indicates that the long-run profit recovery is unlikely to be negligible. Therefore, many suggestions that subsequent recoupment is implausible in a given case may best be understood as claims that very substantial long-run profit recovery is implausible.

Consider next how this more qualified conclusion bears on the logic of finding a defendant not liable by reference to the recoupment condition. For recoupment to fail despite the fact that the right side of the condition is nontrivially positive, it must be that the left side is even larger. This answer, however, is quite problematic for the argument that the defendant's pricing behavior involves accommodation rather than illegal predation. By definition, accommodation involves no profit sacrifice at all. The left side of our condition specifically indicates the extent to which short-run profits are below those arising under accommodation. If we are entertaining the hypothesis that the short-run price is the accommodating one, this profit sacrifice, by definition, is zero. Therefore, if it is indeed demonstrated that there is almost surely some short-run profit sacrifice—indeed, a significant one, enough to raise doubts about whether sufficient profit recovery is plausible—then one has thereby ruled out the explanation of accommodation. And, the more confident we are that there is a large short-run profit sacrifice, the more surely we have ruled out an explanation that definitionally involves none whatsoever.

Lest this important point be missed, some restatement is helpful. Under the accommodation explanation, there is no short-run profit sacrifice, by definition, whereas under the illegal predation explanation there is a short-run sacrifice, which itself is defined by the reduction in profits relative to the level that would be earned under accommodation. Hence, *whether* there was a short-run sacrifice is *directly* diagnostic.⁴⁶ If there was such a sacrifice relative to accommodation, then accommodation has already been ruled out. Moreover, if further inquiry casts doubt on the possibility that the subsequent profit recovery—the value of the right side of the recoupment condition—would be sufficiently large, we have a version of the conundrum discussed in section 2.3 because these findings are inconsistent with both the illegal predation explanation and the competing explanation of accommodation. Further analysis would be required to determine “what gives.” In this respect, one must keep in mind that the estimate of the short-run profit sacrifice—the left side of our condition—would have to be revised all the way down to zero in order for accommodation to fit the facts.⁴⁷ Yet, short of that point, recoupment would be plausible after all, under the presently maintained assumption that there

⁴⁶That this feature is most direct is really a tautology since we are using the presence of a short-run sacrifice to determine whether in fact there was a short-run sacrifice.

⁴⁷Although this statement is formally true, in practice it is a matter of appropriate inferences and confidence bounds, reflecting both uncertainty in external assessment and also the fact that the firm itself may have been uncertain about what price would maximize short-run profits.

would be some prospect of nontrivial profit recovery in the future. Therefore, it seems that one would need to believe that the future profit recovery would almost surely be zero (not merely modest) in order to find the competing explanation of accommodation to be notably more likely than one of predation through this chain of reasoning.

It is also useful to recast the problem starting, not with recoupment, but with any demonstration regarding direct indications of whether the defendant's price was predatory or accommodating. This perspective similarly reveals a tension when one interacts that analysis with the recoupment requirement (*see* Hemphill 2001, 1592–93). The more the defendant's price is proved to fall below the accommodating price, which more strongly rules out accommodation, the greater is the implied short-run sacrifice. But the greater is the implied short-run profit sacrifice, the greater must be the expected future profit recovery. Hence, holding constant estimates of that (the right side of our inequality), the less likely is the recoupment condition to be satisfied. To summarize, it appears that, the stronger is the demonstration of a large price reduction and thus the more forceful is the inference that the observed price was predatory rather than accommodating, the more difficult it is to establish recoupment and thus the stronger is the inference that the price was not predatory after all.⁴⁸

Now, this particular implication does not itself demonstrate liability because, as we have seen, a short-run profit sacrifice is consistent with explanations other than illegal predation: specifically, procompetitive explanations involving investment and, as will be explored in the next section, pricing that is predatory yet legal. But since these alternative explanations themselves each involve short-run profit sacrifice, they too require recoupment. So a demonstration that no significant long-run profit recovery is possible—or, more precisely, that any plausible recovery falls short of the short-run profit sacrifice—is inconsistent with all of them. Indeed, such a conclusion is inconsistent with every explanation we have considered thus far except accommodation, which involves no short-run profit sacrifice.

To resolve this tension, return to the analysis in section 2.3 on triangulation. The diagnosticity of an inability to recover substantial amounts derives from the fact that predation (as well as certain other explanations) is less plausible (a) the greater is the necessary short-run sacrifice and (b) the less is the expected long-run profit recovery. If evidence strongly demonstrates a short-run sacrifice but is ambiguous on long-run recovery, triangulation suggests predation (or, at a minimum, tends to rule out accommodation). If evidence strongly demonstrates a very limited potential for long-run profit recovery but is ambiguous on the significance of any short-run profit sacrifice, triangulation suggests accommodation. When there is significant uncertainty on both fronts, the question is more difficult, and examining other sorts of evidence may be particularly helpful. Once again, it may be useful to attempt to ascertain an alleged predator's strategy by examining internal evidence rather than relying exclusively on external, *ex post* reconstruction through a battle of experts. This point holds quite generally, but

⁴⁸Equivalently, the smaller the alleged price reduction, the more the price seems consistent with accommodation rather than predation yet the easier it is to show the prospect of recoupment that predation requires. Perhaps some of the difficulty arises in practice because plaintiffs' lawyers and their experts may tend to overstate their cases. (*Matsushita*, where the Supreme Court took the claim to be that the defendants had incurred huge losses for decades, is suggestive of this point.) As we can now better appreciate, this can come back to haunt them. In order to prevail on the price-cost test, there may be an inclination to overstate cost and thus the degree of profit sacrifice. But if the posited sacrifice is too large, recoupment may thereby appear to be implausible—even if, supposing actual predation to have occurred, the more modest actual sacrifice could plausibly be recovered.

it is especially sharp when the external evidence is particularly inconclusive (including situations in which it appears to be inconsistent with all of the explanations under consideration).

Note further that factual disputes about how price relates to various measures of cost—ordinarily taken to be central to price-cost tests for predation—bear significantly on assessment of the recoupment condition. The simple reason is the alleged predator’s cost structure is central to many components of the recoupment calculus, as elaborated in section 2.2. Regarding the left side of the condition, the firm’s costs underlie the determination of what is the accommodating price in the first place, what is the level of profits under that price (whatever it turns out to be), and what is the level of profits under the predation hypothesis. Likewise for the right side involving the recovery period: the future prices and future profits under both accommodation and successful predation depend on the firm’s cost structure.⁴⁹

Recognizing these points is critical for proper analysis of recoupment. A hope embodied in attention to recoupment is that, when it is difficult to determine whether a price is predatory under some price-cost test—typically because of the difficulty in measuring the proper notion of cost—we might reach a conclusion more readily by considering recoupment. When recoupment plainly fails (say, because the potential profit recovery is truly negligible), we can infer that the price must be accommodating rather than predatory. But when the prospective profit recovery is nontrivial, it is necessary to estimate the magnitude of the short-run sacrifice that predation requires. In turn, we need to understand the firm’s costs (and many other factors) in order to assess multiple components of the recoupment condition. The hope for simplicity that is reflected by the shift in emphasis from a direct examination of the defendant’s pricing and costs to an analysis of recoupment might best be regarded as wishful thinking.

But not always. If an allegedly predatory scheme, to be successful, would necessarily entail a large profit sacrifice and would generate little prospect of a significant profit recovery, predation is indeed implausible.⁵⁰ And sometimes (particularly in frivolous cases), this may be obvious; moreover, readily dispensing with such cases is important. In essence, a defendant would argue that, on one hand, it did not in fact engage in predation, but rather accommodation, so it incurred no short-run profit sacrifice, but, on the other hand, given the market conditions, if it had indeed sought successfully to drive its rival out, it would have had to incur substantial losses for an extended period of time. That, in turn, would have required a huge long-run profit recovery in order to be profitable, and that degree of success could not plausibly be anticipated in this market.

This logic is sound, but it is unclear how often (in *prima facie* credible cases) the premise holds. As noted in section 2.2 on the recoupment condition and in section 4.1 to follow, many theories of predation provide little basis for determining, *ex ante*, how long a predator must endure its profit sacrifice in order to induce exit. Indeed, in many of the models, exit would be

⁴⁹One way to restate the inquiry when costs are uncertain and we are considering how evidence leading us to believe that the firm’s costs are slightly higher bears on whether liability should optimally be assigned is to ask, in a sense, “what is the derivative of *everything* with respect to cost?” More precisely, formulate the expression for optimal liability determination as an inequality and ask: what is the derivative of each side with respect to cost? If those derivatives have opposite signs, then higher costs unambiguously favor or unambiguously disfavor liability. If they have the same sign, then the influence on the optimal liability decision depends on which derivative has the greater magnitude.

⁵⁰Katz (2006, 6) nicely puts the point. “[Y]ou can think of [the recoupment test] as a reality check: If there was no reason for the firm that has been alleged to have engaged in predation to expect to be able to recoup, then it raises the question of why the firm would have ever tried to engage in predatory pricing.”

swift. This qualification reinforces the theme that it is important to specify up front the differing explanations for an alleged predator's behavior, here the focus being on the anticompetitive story. If, for example, the core theory of the challenger's case makes central the rival's limited financial resources, then there may exist a basis for approximating, *ex ante*, the magnitude of the short-run sacrifice that would be necessary for predation to succeed. If so, recoupment analysis could proceed accordingly.

The larger point in this section is that using recoupment analysis to distinguish predation from accommodation is much more challenging than is commonly supposed. A particular reason to keep in mind is that determination of whether an alleged predatory scheme involves a large profit sacrifice and whether the long-run profit recovery would be relatively small requires substantial knowledge of costs that are regarded to be difficult to assess. More broadly, this section reveals a tension between demonstrations regarding recoupment and those that directly consider defendants' pricing and costs, which poses a significant challenge to efforts at triangulation. In many settings, different strands of evidence pointing more clearly in the same direction are mutually reinforcing, whereas here they may be reinforcing in some respects but conflicting in others, which complicates the inference task.

3.3. Legal Predation

Let us now consider more fully the possibility that a defendant's pricing is indeed predatory—in the sense that it involves a short-run profit sacrifice that is incurred to eliminate or discipline rivals—but is nevertheless legal. This case can arise if the price is above some designated measure of cost and, for that reason, deemed to be legal without regard to whether it is predatory in effect. Because such predation, albeit legal, by definition entails a short-run profit sacrifice, it too requires recoupment in order to be rational. Therefore, at first glance, testing for recoupment does not appear to be diagnostic as between legal and illegal predation.

Examining recoupment may nevertheless be helpful. Perhaps legal predation—because it involves a price higher than that under illegal predation, taking everything else as given, including the alleged predator's costs—entails less short-run profit sacrifice. As a consequence, even though both explanations require a long-run profit recovery, legal predation does not require as much. Therefore, in cases involving significant uncertainty about the extent of profit recovery as well as regarding whether the predation is legal or illegal, triangulation might then lead us toward finding legal rather than illegal predation when the extent of expected long-run profit recovery is lower.

This reasoning, however, fails to take account of all the relevant uncertainties and the nature of the interdependencies among components of the analysis. As just depicted, the story implicitly imagines some given level of a dominant firm's costs alongside different prices, specifically, a lower one for illegal predation than for legal predation. However, in actual cases, the relevant observables and uncertainties are typically reversed. The defendant's price during the alleged predation period is observable, and the dispute about whether it involves illegal versus legal predation depends on whether that price is below some measure of cost, which is not readily observable. That is, the contested uncertainty concerns cost, not price. For a given price, a lower estimate of the alleged predator's costs means that the price is less likely to be illegally low. But, as already explained in section 3.2 when discussing prices that are accommodating, lower costs also affect the degree of short-run profit sacrifice in a number of ways and likewise

the extent of long-run profit recovery. We cannot estimate the degree of expected long-run profit recovery (to determine whether it is low or high) without knowing cost; neither can we ascertain the size of the short-run profit sacrifice. So our uncertainty about cost complexifies our desire to assess the recoupment condition as an aid in triangulation.

To pursue this challenge, suppose that we observe some price in the period of alleged predation and ask: As our estimate of the firm's relevant measure of cost falls (making any predation more likely to be legal than illegal), what happens to the likelihood that the recoupment condition is satisfied? Consider specifically the possibility that lower costs make recoupment easier. When that is so, and if, moreover, the matter of recoupment is a close question, then the hypothesis of illegal predation may seem to be favored over one of legal predation to the extent that recoupment is relevant to classification in the ordinarily imagined fashion—because legal predation might suggest that the recoupment condition would be met by a notably greater margin. Clearly, insufficient attention (essentially none) has been given to the relevance of a recoupment inquiry when comparing the explanations of legal and illegal predation.

In light of this potential for recoupment analysis to have ambiguous implications, we should step back and be more explicit about how such analysis relates to our overall decision framework. Recoupment analysis tends to be illuminating precisely when we are uncertain about other matters, notably, cost, and are attempting to triangulate using our best but uncertain estimates regarding multiple factors. Accordingly, we can consider particular types of evidence that pertain to particular factors—costs, entry conditions, the elasticity of market demand, and so forth—and ask whether, say, a higher level of some factor (holding all else equal) favors or disfavors the illegal predation explanation versus the legal one.⁵¹ Simply asking about the recoupment condition—which is influenced by many factors, some of which (most obviously, costs) pertain to other parts of the analysis—is insufficient and can be misleading.

If we knew literally everything that pertained to the recoupment condition, we would be able to extract and recombine the relevant components in a manner that revealed the explanation for the behavior we observed. Accordingly, we could determine whether pricing was legal or illegal without then having to inquire into recoupment. Instead, because we have significant uncertainty about many components of the analysis, our question is whether a belief that a particular factor is, say, larger, favors one conclusion or another overall, where a significant but not exclusive channel of relevance for that factor may be via the recoupment condition.

For example, easier subsequent entry may suggest that the expected long-run profit recovery may be less. But one would have to ask whether the reason that subsequent entry is imagined to be easier bears on other parts of the analysis. If entrants were anticipated to be less fearful of joining the fray because the dominant firm's costs are imagined to be fairly high, then the observed price in the alleged period of predation is, on that account, more likely to be below the appropriate measure of cost and thus more likely to be illegal. One would also have to consider whether the change in the profits that would be recovered is in a range in which the recoupment condition is significantly diagnostic. For example, if the magnitude of the short-run profit sacrifice entailed by illegal predation is not very great, knowing that the expected long-run profit recovery will merely be large but not huge may not significantly negate illegal predation.

⁵¹As many economists will appreciate, as a practical matter the “all else equal” proviso here may be problematic because, when undertaking simulations, it may be thought appropriate when changing one factor, say, the hypothesized level of costs, to recalibrate in ways that imply different values for other unknown parameters.

To explore this multi-channel phenomenon further, let us return to settings in which the core uncertainty concerns the relevant measure of cost and consider that factor more fully. Suppose that, if the alleged predator's cost is at the higher end of plausible values consistent with the evidence, then it is higher than the observed price and hence there was illegal predation; but if its cost is instead at the lower end of the relevant range, it is below price and hence the behavior was legal, even if predatory. Consider now how possible differences in our cost estimate bear on whether the recoupment condition is satisfied.⁵²

If the cost is higher, then the additional units of output sold during the predation period (that is, relative to the number of units sold under a strategy of accommodation, our benchmark) are less profitable than if the cost is lower. Therefore, the cost being at the higher end of our range and, accordingly, the price being more likely to be illegally predatory, is associated with a greater short-run profit sacrifice and thus a greater need for long-run profit recovery.⁵³

But we also need to consider how the cost being higher affects the expected long-run profit recovery. Suppose further that, once rivals were driven out, the dominant firm's output would be higher than under a strategy of accommodation.⁵⁴ Now, if the firm's cost is higher, then those additional units of output during the recovery phase will be less profitable than if the costs were lower. So, under cost levels more consistent with illegal predation, the long-run profit recovery is smaller.⁵⁵

Combining these points for this simple illustration of one possibility when the firm's costs are higher—itsself indicating illegal predation—the short-run profit sacrifice is larger and the long-run profit recovery is smaller, both of which make the recoupment condition less likely to hold. And, if it does hold, it will tend to do so by a smaller margin. In particular, the margin would be smaller than if the firm's costs were lower—here, by assumption, indicating legal predation—since that implies both a smaller short-run profit sacrifice and larger profit recovery in the recoupment period.

This juxtaposition has an interesting feature: if we could directly see (which ordinarily we cannot, a point central to the present analysis) that the recoupment condition was satisfied by a wide margin, this would be consistent with both legal and illegal predation. If the recoupment condition surely fails altogether, that would be consistent with neither hypothesis—but it may well be consistent with accommodation, favoring no liability on that account.⁵⁶ But what about

⁵²As mentioned in note 49, a complete analysis can be understood as “taking the derivative of everything with respect to cost.”

⁵³The analysis here and below, although fairly involved, is still oversimplified. As we imagine different cost levels, we should also be considering how they imply different changes in quantity (keeping in mind, as explained in section 2.2, that much imputation, including of quantities, is required for recoupment analysis), which has further implications for the degree of profit sacrifice (and, relevant to the text to follow, for the degree of profit recovery).

⁵⁴In the case in which output would be lower upon success than it would have been under accommodation, then a higher cost would reduce accommodation profits relatively more, which would raise the estimated long-run profit recovery (the right side of our recoupment condition). In that case, both the short-run profit sacrifice and the long-run profit recovery would be greater, so it would be ambiguous whether the recoupment condition was more likely to be satisfied. (If output would be only slightly lower, the long-run profit recovery would only be slightly higher when cost is higher, so the greater short-run profit sacrifice would dominate.)

⁵⁵Note that we need to impute some of the behavior in the recovery period, and different cost estimates imply different prices and quantities, both of which feed back into the profit terms, further complicating the analysis.

⁵⁶Recall from section 3.2, however, that if we are confident that there was a significant short-run profit sacrifice, we would for that very reason have ruled out accommodation.

when recoupment is a close question and seems to hold just barely? That may be more consistent with illegal predation than with legal predation, favoring liability. Put another way, in this example, the recoupment requirement is easier to meet for legal predation than for illegal predation, but the implications for liability may not be what one might have expected. On one hand, easier recoupment under legal (compared to illegal) predation can favor exoneration because the recoupment condition is more likely to hold. But, on the other hand, easier recoupment under legal predation can favor liability when the recoupment condition is close because legal predation (with its concomitantly lower production costs) may imply that the condition should hold by a wide margin rather than a narrow one.

We have just seen yet another instance in which recoupment's role in triangulation is quite subtle and the degree to which a recoupment inquiry may improve our ability to classify predation as illegal versus legal may be limited. This conclusion is unfortunate because recoupment inquiries are often thought to be most useful when there exists significant uncertainty about a defendant's costs—notably, when the range of uncertainty includes serious possibilities that the relevant cost measure may be either above or below the observed price. We have just seen that, in this very case, recoupment analysis has a subtle relationship when triangulating to determine whether liability is appropriate. Indeed, in the example given, attention to recoupment may have implications for liability opposite to what is commonly supposed.

This case, like those in sections 3.1 and 3.2, reinforces a central lesson of part 2: recoupment cannot properly be analyzed in a vacuum. The diagnostic exercise is centrally about triangulation. First, we need an explicit understanding of the pertinent competing explanations for the allegedly predatory pricing because the manner in which recoupment is diagnostic varies greatly across these explanations. Second, for any given factor—keeping in mind that many factors feed into our recoupment condition, some affecting both sides of the inequality and in multiple ways—we need to consider all of its channels of relevance. The reason is that changes in parameters that influence the plausibility of recoupment may also bear in other ways on the likelihood of the competing explanation under examination. That is, one cannot properly analyze the recoupment condition taking everything else to be constant because much of “everything else” is precisely what determines whether the recoupment condition is satisfied, by how much, and how this matters. Attempting to reach a separate, up-or-down conclusion on recoupment can be more misleading than helpful.⁵⁷

3.4. Other Explanations

So far, this part on competing explanations for illegal predatory pricing has considered

⁵⁷Although this article does not directly address the debate about predation tests, the difficulty in distinguishing legal from illegal predation through consideration of recoupment—combined with acknowledged practical difficulties of applying cost-based tests—does motivate reassessment, particularly for cases in which it may be fairly clear that predation occurred (short-run profit sacrifice is obvious and the sorts of procompetitive investments examined in section 3.1 are implausible) but unclear whether the price during the predation period was above or below a pertinent measure of cost. *See also infra* section 3.5 (addressing the costs of false positives when the true explanation is accommodation versus legal predation). Relatedly, some cost-based rules call for different analysis for different ranges of costs, perhaps distinguishing cases in which price is below avoidable cost, above avoidable cost but below total cost, and above total cost. *See, e.g.,* Bolton, Brodley & Riordan (2000, 2273–74). But if there is significant uncertainty about where a case falls, and if moreover (as suggested by the analysis here and in section 3.2) that other analysis feeds back on the assessment of the likelihood that the case falls in one range or another, it is unclear what is actually being recommended.

procompetitive investments, accommodation, and legal predation. In examining the behavior of presumed-to-be-rational profit-maximizing firms, this list may seem to be exhaustive. After all, we are exploring recoupment, and it seems that either there was no profit sacrifice in need of recoupment (accommodation) or, if there was, that the profit sacrifice was to accomplish some purpose, a procompetitive one (a legitimate investment) or an anticompetitive one (predation, be it legal or illegal).

Nevertheless, much recoupment analysis, by courts and commentators alike, seems to be attempting to distinguish illegal predation from some other, unspecified phenomenon. Moreover, although the analysis purports to be inspired by the notion that plausible explanations must be consistent with profit maximization, it seems to be identifying scenarios in which there is significant profit sacrifice without any plausible prospect of recovery.

We previously considered the conundrum that arises if one simultaneously believes that there would be a substantial short-run sacrifice but also that there was no serious prospect of recovering the losses. For a rational, profit-maximizing firm that is aware of what it is doing, this case would seem to be impossible. Yet it is precisely this case that some discussions of predation and recoupment appear to envision. On one hand, this might be expected when one is contemplating the significance of imposing an independent recoupment requirement, for it will be decisive precisely in cases in which predation is otherwise established but recoupment is disproved. On the other hand, concentrating on this combination is surprising because attention to recoupment arose specifically due to an emphasis on the implications of rational, profit-maximizing behavior by firms, which seems to rule this case out. Taken together, this is a serious puzzle because the apparent conflict arises not in some isolated cases of little relevance but in the core situations in which recoupment matters most.

This apparent focus on irrational or impossible scenarios in the name of rationality seems largely unnoticed and hence unexamined. As will be explored here, such analysis seems to suppose that the alleged predator either made a mistake or willfully chose to benefit consumers at its own expense. Moreover, it is thought to be important to exonerate such behavior so as to avoid discouraging it. The message seems to be that antitrust law must be careful to avoid punishing firms that are confused or think they are Santa Claus.

To lay the groundwork for further exploration, consider a stylized example in which there is a given (anticipated and actual) short-run profit sacrifice of 100. The expected and actual long-run profit recoveries may fall in different ranges. If the expected profit recovery exceeds 100 and actual profit recovery exceeds 100, the recoupment condition is satisfied, so if there would otherwise be liability, liability indeed is to be assigned. If the expected profit recovery exceeds 100 but actual profit recovery does not, this suggests that predation was a risky but ex ante profitable investment that, like many risky investments, sometimes does not pay off. In this scenario, the recoupment condition is generally regarded to be satisfied—ex ante recoupment being sufficient—so liability attaches (if supported in other respects). For further discussion of this case, which involves the punishment of failed attempts, see section 4.3.

A third possibility is that the expected profit recovery is less than 100 but actual profit recovery occurs. Here, there is ex post recoupment, and the general view is that the recoupment condition is satisfied. This case (also discussed further in section 4.3), however, should never be observed because predation was not ex ante profitable and defendants are presumed to be profit-maximizers. Perhaps the successful profit recovery should lead a tribunal to revise its belief that the act was ex ante unprofitable: firms know better than courts, and a defendant's expert who

argues in litigation that its client was acting irrationally should be viewed with skepticism.⁵⁸ Of course, another possibility is that the conclusion that profit recovery did take place may be the one that is in error, which is our next case.

Finally, and our focus in this section, suppose that the expected profit recovery is less than 100 and actual profit recovery does not in fact occur (or we are examining the situation before it can be determined whether such recovery would in fact have occurred). Here, the recoupment condition fails. But what are we to make of such a case? As already noted, the existence of a short-run sacrifice of 100 with no prospect of sufficient recovery is puzzling. Taking the alleged predator to be rational—as courts, agencies, and commentators purport to do—this case should never arise.

If the firm is indeed rational, there are a number of possibilities with respect to this final scenario: The conclusion of insufficient recoupment because of a low (expected or actual) long-run profit recovery might be in error. In addition or instead, the conclusion that there was (or should have been expected to be) a short-run profit sacrifice of 100 might be in error. Articulating these possibilities leads us back to the emphasis on triangulation that began in section 2.3. Central to that analysis is the presence of some (often substantial) uncertainty in the pertinent imputations and calculations. For example, perhaps the short-run profit sacrifice was only 50, so an expected long-run profit recovery of 75 would be sufficient to satisfy the recoupment condition. Another possibility is that there really was no short-run profit sacrifice to begin with (rather than the seemingly large one); that is, the defendant's strategy was one of accommodation.

Suppose instead that one eschews such triangulation, as courts and commentators sometimes seem to have done, perhaps without realizing it. One then must adopt some alternative explanation for the defendant's behavior.⁵⁹ Consider first the possibility that the defendant firm was mistaken. For example, suppose that it engaged in a predation strategy that would incur a short-run profit sacrifice of 100 in driving out or disciplining rivals but that it should have expected to recover only 75. Regarding why such a defendant should be exonerated (as it would be under an independent recoupment requirement), some suggest that consumers

⁵⁸See *Brooke Grp. Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 257–58 (1993) (Stevens, J., dissenting) (“[T]he jury was surely entitled to infer that at the time of the price war itself, B & W reasonably believed that it could signal its intentions to its fellow oligopolists, see App. 61, assuring their continued cooperation.”); *id.* at 257 n.18 (“Judge Easterbrook has made the same point: ‘Wisdom lags far behind the market[.] [L]awyers know less about the business than the people they represent. . . . The judge knows even less about the business than the lawyers.’ Easterbrook, *The Limits of Antitrust*, 63 *Texas L. Rev.* 1, 5 (1984).”); see also *Ordovery* (1998, 82) (“[T]he firm’s conduct reveals its belief that recoupment is possible. In that sense, the recoupment test substitutes the court’s assessment of the likelihood of success for the independent business judgement of the alleged predator.”).

⁵⁹This section does not consider various explanations that deviate from conventional profit-maximization in ways that can be assimilated into the standard paradigm. Notably, there may exist agency problems in firms (a decision-maker may expect a higher bonus even if the firm does not ultimately recoup its losses), and managers may suffer from cognitive biases (an overly optimistic manager may attempt predation). The dissent in *Matsushita* suggested that perhaps the Japanese firms may have been maximizing growth rather than profits. *Matsushita Elec. Industrial Co. v. Zenith Radio*, 475 U.S. 574, 604 (1986) (White, J., dissenting). See also *Joskow & Klevorick* (1979, 233 n.50) (suggesting that some departures from profit maximization may raise the welfare costs of a failure to deter predatory pricing). In addition, the behavior of both alleged predators and their prey may be influenced by factors such as optimism bias, further complicating the inference process. Finally, one court suggested that revenge might explain below-cost pricing with no prospect of recoupment. See *Am. Academic Suppliers, Inc. v. Beckley-Cardy, Inc.*, 922 F.2d 1317, 1322 (7th Cir. 1991).

experience a net benefit.⁶⁰ Specifically, they gain something presumed to be proportional to 100 up front and lose something of similar proportion to 75 at the back end.⁶¹ (Relatedly, it is supposed that consumer rather than total welfare is the objective in light of the fact, elaborated in section 2.4, that even mistaken predation may entail a net loss in total welfare in both the predation period and the recovery period.) It is also sometimes mentioned that it is not the role of antitrust law to police firms' mistakes.⁶²

These ideas are suggestive, but only that. Note that the criminal law ordinarily punishes failed attempts that reflect a mistaken view of one's capacity to succeed, Sherman Act Section 2 explicitly makes attempted monopolization an offense, and a common form of mistake, involving negligence, is routinely a basis for tort liability, not a defense. The fact that victims may overall benefit rather than suffer from a defendant's error does distinguish the present situation from these others, but it still does not provide a clear, affirmative rationale for exoneration.

Failing to exonerate defendants engaged in predation that, contrary to their own analysis, cannot really be expected to be profitable does not seem best understood as aiming antitrust enforcement at mistakes for purposes of providing a legal corrective when market discipline has proved to be deficient. Rather, it involves abstention from undertaking additional effort (and risking court error) when assessing behavior that otherwise would be regarded as illegal (because ordinarily harmful) for the purpose of removing occasional mistaken behavior from the reach of liability. Another irony is that the suggested inappropriateness of punishing mistakes in this context is rationalized on the ground that losses born by the defendant should not be counted in the social calculus: consumers gain; defendants be damned. That is, the choice to disregard the defendant's welfare is being invoked to exonerate defendants that would otherwise be held liable.

Such musings on the propriety of punishing mistakes, which do not explicitly examine the consequences of doing so, are unlikely to provide useful direction.⁶³ The most straightforward, affirmative argument for exoneration might seem to be that these mistakes are beneficial (at least to consumers), rather than harmful, and the prospect of sanctions would discourage behavior that generates these consequences; hence, antitrust law should not condemn such mistakes. This line of reasoning gains further support from the emphasis in predation cases and policy analysis on the need to avoid chilling desirable behavior.

There is, however, a mismatch. Explicit discussions of chilling refer to discouraging procompetitive price reductions, such as those involved in accommodation or with investments of the sort examined in section 3.1. But here we are addressing consciously predatory behavior that would be illegal (and harmful) but for the fact that the firm is mistaken about how much

⁶⁰See, e.g., *Brooke Group*, 509 U.S. at 224 (in justifying the recoupment requirement, emphasizing that "unsuccessful predation is in general a boon to consumers"); ABA (2005, C-52) (citing *Brooke Group* in a note for the proposition that "[t]he rationale for requiring proof of both below-cost pricing and a dangerous probability of recoupment is that the antitrust laws protect consumers not competitors, and low prices always benefit consumers").

⁶¹As explained in section 2.4, actual measures of consumer welfare (and total welfare) do not have a common or linear relationship with profits (including negative profits) in either the predation or recovery periods.

⁶²See, e.g., Easterbrook (1984, 24–25). The possibility that defendants' seemingly anticompetitive behavior may simply be mistaken—rather than anti- or procompetitive in the usually discussed ways—has received little attention in the literature. Some of the ideas developed in this section are suggested in an earlier, brief treatment (Kaplow 1985, 548–50).

⁶³See generally Kaplow (1990) (analyzing the optimal punishment of mistaken violations of the law); Kaplow & Shavell (2002) (arguing for a welfare-based (consequentialist) approach to legal policy).

profit it will earn from its efforts. Furthermore, the claim that punishing mistakes would deprive consumers of the concomitant benefits from ill-conceived predatory episodes assumes that the prospect of liability for these sorts of mistakes would discourage them. Yet by assumption firms *ex ante* do not believe they are making mistakes.

Behaviour might nevertheless be influenced because, if this defense (via a recoupment requirement) is anticipated to be important, firms might further believe that, when they act, there is some possibility that tribunals would (incorrectly) think that their apparent predation was mistaken and thereby immune from liability. This, in turn, would tend to reduce both deterrence and chilling. Regarding deterrence, a prospective predator might appreciate that it has some chance of convincing the tribunal, *ex post*, that it was mistaken in its *ex ante* belief that predation would be profitable and thus be exonerated.⁶⁴ By similar logic, chilling would be reduced as well because firms choosing nonpredatory strategies that might be inappropriately challenged as predation and thus result in liability will now have an additional means of avoiding liability. Appropriate combination of these two considerations would, in principle, allow one to determine whether acknowledging and then exonerating seemingly mistaken predation would be part of an optimal scheme for liability.

Another way to view the matter—which should, in principle, be equivalent if both methods are undertaken properly—is in terms of triangulation. When various findings are in logical tension, it is necessary to ascertain what evidence and which subsidiary findings are most compelling and, as appropriate, to adjust other inferences accordingly. Here we are contemplating cases in which there is both strong evidence of actual predation (which implies that the alleged predator did expect to recoup) and strong evidence indicating that the requisite profit recovery is quite unlikely to have been rationally anticipated. When favoring the latter over the former, we have been—following what appears to be implicit (and sometimes explicit) in writing by some courts and commentators—interpreting this as involving the imputation of mistakes to defendants.

Perhaps a more satisfactory resolution is to recognize that a rational firm will believe that it sometimes make mistakes—after all, both individuals and firms with self-awareness realize that they are not perfect. It is probably more useful simply to assimilate this possibility into a firm’s *ex ante* decision calculus that already recognizes uncertainty. That is, a firm contemplating predation (or any other strategy) will calculate costs and benefits on an expected basis, taking into account that prospects may be dimmer than they might wish.

Another more straightforward resolution would justify a failure to assign liability in such cases with the belief that the evidence contradicting recoupment is sufficiently strong to cast doubt on the inference, drawn from other evidence, that predation indeed occurred. Of course, this rationalization may or not be convincing depending on the nature of the different sets of evidence. And when there is, say, strong internal evidence that unambiguously indicates a predatory plan, predicated in part on an expectation of recoupment, one may be quite reluctant to attribute the defendant’s behavior to mistake except when one is highly confident that

⁶⁴In part, any resulting deterrence deficit might be rectified by enhancing enforcement in other respects, such as by raising sanctions. Typically, such offsets would also increase chilling. Addressing what mix of penalties, other enforcement dimensions, substantive legal rules, proof requirements, and other procedures is optimal for predatory pricing is beyond the scope of this article. For treatments that combine a number of these features in a general law enforcement context when there are concerns for both deterrence and chilling, see Kaplow (2011, 2012a, 2013, 2017b, 2017c).

recoupment was entirely implausible.

However one chooses to view the conclusion as a matter of inference and characterization, whether exoneration is appropriate in a particular class of cases depends fundamentally on its consequences. Failing to assign liability in the setting under discussion will reduce both deterrence and chilling somewhat, and it is these effects that determine whether exoneration is optimal.

Finally, and remarkably, some writing suggests that, rather than a mistake, recoupment may fail because an alleged predator incurred a short-run profit sacrifice *knowing* ex ante that there was no rational prospect of subsequently recovering the sacrifice. But if one adopts this alternative view—and believes that this is an important class of cases to be concerned with—it is now even harder to rationalize what is going on. Is it believed that many apparent predators are disguised Santas?⁶⁵ And that it is important to avoid holding Santas liable lest the prospect of liability deter them from sacrificing their profits to stuff consumers' stockings?⁶⁶

A key lesson is that, as per section 2.1, it is quite important to articulate explicitly the competing explanations in order to analyze a case. Some recoupment analysis appears to assume that tribunals are better at understanding industries and strategic investments than are firms themselves. The unstated competing hypotheses, moreover, can be internally inconsistent and even outright fanciful. By leaving nebulous the alternative explanation to illegal predation, analysis can go astray.

3.5. False Positives Are Not Created Equal

In adopting a cautious approach toward the assignment of liability for allegedly predatory pricing, courts, agencies, and commentators express a strong concern for how the prospect of false positives may chill procompetitive, welfare-increasing price competition.⁶⁷ In subsequent analysis of particular aspects of predatory pricing, this concern is implicitly treated as uniform and substantial; it is taken as given, looming in the background. However, sections 3.1–3.4 enumerate a variety of competing explanations for allegedly illegal predation that differ in many ways. Hence, it should come as no surprise that false positives are not created equal. Moreover, the welfare consequences of the false positives that most have in mind in advancing cautious predatory pricing rules are qualitatively and quantitatively different from those of the false positives that are sometimes at stake in particular cases.

The most commonly envisioned type of false positive seems to arise from the assignment

⁶⁵Elzinga and Mills (1994, 576) emphasize that in *Brooke Group* “[t]he Court was not prepared to endorse a theory of philanthropic predation.” However, neither they nor the Court articulate just what alternative theory they contemplate—that is, which is consistent with their acknowledgment of a substantial short-run profit sacrifice and the ex ante implausibility of an equally significant long-run profit recovery.

⁶⁶*See* *Advo, Inc. v. Phila. Newspapers, Inc.*, 51 F.3d 1191, 1200 (3d Cir. 1995) (“Such futile below-cost pricing effectively bestows a gift on consumers, and the Sherman Act does not condemn such inadvertent charity.”); *A.A. Poultry Farms, Inc. v. Rose Acre Farms, Inc.*, 881 F.2d 1396, 1401 (7th Cir. 1989), *cert. denied*, 494 U.S. 638 (1990) (“Price less than cost today, followed by the competitive price tomorrow, bestows a gift on consumers. Because antitrust laws are designed for the benefit of consumers, not competitors, . . . a gift of this kind is not actionable.”); Leslie (2013, 1709, 1742) (“Courts and commentators routinely praise the first phase of predatory pricing, in which the predator charges a price below cost. Judges characterize this as a gift to consumers that antitrust law should be loath to penalize or deter.”).

⁶⁷*See, e.g.*, *Brooke Grp. Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 226–27 (1993).

of liability when the defendant's pricing actually involved an accommodation of rivals. Within this category of explanation for allegedly predatory pricing, the social costs can differ considerably. As the literature explains, pricing that involves short-run profit maximization may sometimes even reduce welfare.⁶⁸ Accordingly, optimal liability determinations should in principle recognize the substantial variation in the costs of assigning liability, which is to say, they should account for how some of the evidence in a given case bears not only on classification—predation versus accommodation—but also on the magnitude of this error cost.⁶⁹

Moreover, sections 3.1–3.4 indicate that there exist qualitatively different explanations for what might appear to be illegal predation: procompetitive explanations, legal predation, and mistakes—as well as accommodation. Even taking averages for the chilling costs within each category, there is substantial heterogeneity in chilling costs across these categories. Chilling the promotion of new products can be much more costly than is the chilling of accommodation. By contrast, chilling legal predation may well be socially desirable. And when it is not, the harm of such chilling may be substantially less than that from chilling accommodation or procompetitive investment. Thus, it may be much more socially costly to chill Amazon's use of promotional pricing when entering a new product line or Walmart's short-run profit maximization when entering new geographic markets than it would be to chill an airline's predatory pricing—which succeeds in driving out a low-cost competitor—when the alleged predator's price was slightly above some deemed cost measure. Section 3.4 further suggests that it is unclear how much chilling of mistakes would actually occur as a consequence of assigning liability or, conditional on incentive effects arising, how harmful they would be.⁷⁰

Analytically, most of the foregoing is straightforward once one recognizes the large qualitative variation in competing hypotheses and hence in the character of possible false positives. It is nevertheless helpful to elaborate on the cost of false positives involving legal predation in particular, which relates to a more general point about the nature of legal rules. In settings in which the underlying rule is a consciously chosen proxy standard, such as with predatory pricing rules that contemplate a zone of legal predation, one should expect error costs to differ from those under a precisely targeted rule. A common rationale for such circumscribed predatory pricing rules is that, even if an additional penumbra of conduct is often undesirable, it should not be deemed illegal because, if it was, the associated chilling costs from the prospect of

⁶⁸For example, it may drive out less efficient competitors that would, if they remained present, sufficiently discipline the dominant firm's pricing as to increase total welfare, or at least consumer welfare. In such instances (which might instead be classified as legal predation), a chilling cost would actually be a social benefit.

⁶⁹This point supplements the discussion in section 2.4 of how recoupment analysis itself may bear on error costs; there, the emphasis was on how the benefits of deterring actual predation can vary substantially. More broadly, one should consider how various aspects of the analysis of recoupment (and predation as a whole) bear on error costs. For example, the ease of entry in the recoupment period is often cited as a reason to believe that recoupment is implausible. However, the ease of entry also bears on the magnitude of errors. As explained in section 2.4, the difficulty of recoupment due to easy entry suggests that the social harm conditional on failing to deter particular predatory behavior may be small, reinforcing the argument against liability. On the other hand, the ease of entry may also suggest that chilling costs are low because, if the dominant firm does not lower its prices as much, losses to consumers may be mitigated by entry.

⁷⁰See also *supra* section 2.4 (discussing how the magnitude of error costs depends on what is taken to be the objective of antitrust enforcement); *supra* note 36 (addressing the tension among welfare standards wherein production efficiency is sometimes invoked to support cost-based predation tests whereas consumer welfare is the standard used in advocating that liability should be limited to settings with recoupment, notably, in arguing that failed or mistaken predation benefits consumers overall even if efficiency is reduced).

mistaken imposition of liability *at the outer boundary of that broader rule* would be great. Granting this view, it must be recognized that, when considering the boundary between illegal and legal predation—which is notoriously difficult to identify under cost-based tests because of the challenges in measuring a defendant’s costs—mistakes *at this inner boundary* are not as costly as mistakes that would result in attempting to police the outer boundary between what is deemed to be legal predation and accommodation.

A rough but perhaps more intuitive way to restate the idea is as follows: Suppose that one did decide to penalize all predation that reduced some stated measure of welfare. Then, in close cases, one should perhaps lean heavily toward exoneration due to the concern for chilling pricing that is not truly predatory in any sense. Compare this scenario to that in which one limits the legal proscription to a narrower subset of predation, implicitly legalizing a range of predation that may be harmful. Then, in close cases, one should perhaps lean toward liability because borderline false positives involve actual (although formally legal) predation, lying just outside the illegal zone. This idea can also be understood as a natural outgrowth of the incentive provision approach sketched below in section 4.2: In attempting to determine an optimal liability rule, one should consider the consequences for ex ante behavior of varying slightly any contemplated threshold (here, corresponding to the legal rule defining predation). If one starts from a threshold that is rather generous to liability, narrowing the rule somewhat may well be desirable with respect to the tradeoff between deterrence and chilling, but if one starts from a strict threshold, then loosening it at the margin may be optimal.

Sections 3.1–3.4 emphasize the importance of identifying with some specificity both anti- and procompetitive explanations for alleged predatory pricing, mainly for purposes of guiding the triangulation process when engaging in classification. In this section, by contrast, the point is that specifying the competing explanation to illegal predation can be quite important for purposes of assessing the social costs associated with the mistaken imposition of liability.

To round out the analysis, we should recognize that false negatives are not created equal either. For example, failing to deter predation that generates a reputation for toughness in many markets may be much more costly than failing to deter predation with more limited effects. Taken together, we can see that fuller specification at the outset of competing explanations—both anti- and procompetitive ones—is all the more important in the conduct of predatory pricing analysis.

4. ADDITIONAL CONSIDERATIONS

Parts 2 and 3 focus on recoupment, but much that has been said—particularly about the need for explicit identification of both anti- and procompetitive explanations for the practice under scrutiny—bears on a broader range of issues related to predatory pricing. And, conversely, much modern economic analysis of predatory pricing and also of optimal law enforcement more broadly pertains to how recoupment should be analyzed. Sections 4.1 and 4.2 examine, respectively, how these two larger literatures relate to the foregoing analysis. Section 4.3 compares and contrasts ex ante and ex post perspectives on recoupment, in the process linking the analysis of predatory pricing to that of the optimal treatment of failed attempts.

4.1. Economics of Predatory Pricing

The relationship between the industrial organization economics literature on predatory pricing and modern doctrine and discourse on the subject raises yet another puzzle. On one hand, most regard current antitrust law to be heavily shaped by the core principles of contemporary economics. This point is sharply illustrated by Supreme Court antitrust cases that reversed precedents explicitly because prior law was regarded to deviate from economic substance.⁷¹ Moreover, the development of modern antitrust doctrine on predatory pricing draws on economics literature for the proposition that predatory pricing is rare in justifying rules that circumscribe liability, and it emphasizes economic rationality specifically in advancing the recoupment requirement.⁷²

On the other hand, the general view that there exists a substantial convergence between antitrust doctrine and economic understandings is substantially mistaken in this context. Theoretical work on predatory pricing—which exploded in the 1980s and served to rationalize many views that some had cast aside as inconsistent with economic logic—has had little impact on doctrine⁷³ and only an intermittent influence on broader antitrust discourse.⁷⁴ Furthermore, the Supreme Court did not attend to empirical work that had already supplanted what it cited in its key opinions⁷⁵ to the effect that “predatory pricing schemes are rarely tried, and even more rarely successful.”⁷⁶ In light of this gap, which some commentators have noted⁷⁷ but few have

⁷¹See *Continental T.V., Inc. v. GTE Sylvania Inc.*, 433 U.S. 36, 54, 56 (1977) (overruling *United States v. Arnold, Schwinn & Co.*, 388 U.S. 365 (1967)); *Leegin Creative Leather Prods., Inc. v. PSKS, Inc.*, 551 U.S. 877, 887, 888-89 (2007) (overruling *Dr. Miles Med. Co. v. John D. Park & Sons Co.*, 220 U.S. 373 (1911)).

⁷²See *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 588–90 (1986) (on the rarity of predatory pricing); *id.* at 587, 596 (on rationality and recoupment); *Brooke Grp. Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 227 (1993) (recalling *Matsushita* on the rarity of predatory pricing); *id.* at 224 (on rationality and recoupment).

⁷³A limited exception is *United States v. AMR Corp.*, 335 F.3d 1109, 1114–15 (10th Cir. 2003), where the court recognized the modern theoretical literature and stated that, “[a]lthough this court approaches the matter [of predatory pricing] with caution, we do not do so with the incredulity that once prevailed.”

⁷⁴See EU Competition Commission (2009, ¶ 68) (briefly noting leading modern theories of predation, but unlike many other parts of its discussion of predatory pricing, failing to cite illustrative cases).

⁷⁵See, e.g., Kaplow & Shapiro (2007, 1197, 1199 n.192) (discussing the uncited article, Zerbe & Cooper 1982, which considered more cases and reached different conclusions from those in the cited article, Koller 1971); *id.* at 1197 (discussing more modern empirical evidence, some of which was published before *Brooke Group*).

⁷⁶*Matsushita*, 475 U.S. at 589. This passage is quoted, in turn, in *Brooke Group*, 509 U.S. at 226. *Matsushita* mistakenly (presumably because it was not better informed by the litigants) refers to a “consensus among commentators” (which is supported by references to only those commentators on one side of the so-called consensus), whereas *Brooke Group*’s quotation of *Matsushita* omits (without comment) this characterization.

⁷⁷See, e.g., Bolton, Brodley & Riordan (2000, 2241) (“Indeed, since *Brooke* was decided in 1993, no predatory pricing plaintiff has prevailed on the merits in the federal courts. At the same time, modern economic analysis has developed coherent theories of predation that contravene earlier economic writing claiming that predatory pricing conduct is irrational. More than that, it is now the consensus view in modern economics that predatory pricing can be a successful and fully rational business strategy. In addition, several sophisticated empirical case studies have confirmed the use of predatory pricing strategies. The courts, however, have failed to incorporate the modern writing into judicial decisions, relying instead on earlier theory that is no longer generally accepted.”); *id.* at 2242–50; Hemphill (2001, 1605–06) (“In 1993, Alvin Klevorick performed an analysis demonstrating that no predatory pricing case had even considered reputation, signaling, or asymmetric information, nor cited the main contributions or contributors to recent economic thinking about predatory pricing. Nor did *Brooke Group* do so. An update of Klevorick’s search [in 2000] reveals that the situation has hardly changed since *Brooke Group*.”); *id.* at 1600–07.

substantially developed,⁷⁸ it is natural to reflect briefly on what we do and do not understand about predatory pricing, with specific reference to its relationship to the analysis in this article regarding recoupment.

Modern theoretical work focuses on anticompetitive explanations, exploring models in which predatory pricing might be successful (for surveys, see Bolton, Brodley & Riordan 2000, 2247–50, 2285–2321; Milgrom & Roberts 1990; and Ordover & Saloner 1989, 545–62). This work examines asymmetric information (for example, entrants have uncertainty about a dominant firm’s costs; *see* Kreps & Wilson 1982; Milgrom & Roberts 1982), signal-jamming behavior (wherein the incumbent firm adopts a strategy rendering it difficult for entrants to ascertain potential profitability; *see* Fudenberg & Tirole 1986; Scharfstein 1984), and limited access to financing (even where entrants and their funders are sophisticated; *see* Bolton & Scharfstein 1990). The heterogeneity and complexity of these models highlights the need to articulate anticompetitive explanations with greater specificity, an analogue to the emphasis in part 3 regarding the need to specify procompetitive explanations. Such precision is important to classification because, as we have seen with respect to recoupment’s possible diagnostic role, it is difficult to know what information bears differentially on competing explanations, and how so, when those explanations are ambiguous. For example, some theories concern entrants’ perceptions of a dominant firm’s costs, but a best guess, after the fact, as to what those costs actually were (by some stated legal test that may differ from the relevant cost measure under the theory) does little to illuminate the entrant’s *ex ante* uncertainty about the matter. Relatedly, as already mentioned, the magnitude of harm conditional on predation depends on the form and context of that predation (most obviously, establishing a reputation in a multi-market setting not only calls for a different diagnostic approach but also suggests a larger scope for harm).

There are also significant limitations on existing theory that render its application in particular cases difficult and call for further research. First, most models present a single anticompetitive explanation and identify, within the model, how the strategy works and what its success depends on. Although helpful for classification, the work usually does not explicitly compare different explanations and thereby directly indicate how one would distinguish them in practice.⁷⁹ Another limitation is that most of the literature does not analyze features of different potential predation scenarios that bear on the requisite duration of predation, which importantly influences the magnitude of the expected short-run profit sacrifice and hence bears directly on recoupment analysis (exceptions include Benoit 1984 and Easley, Masson & Reynolds 1985). A different problem is that most theoretical work abstracts from enforcement: that is, it considers how different firms would behave in a world governed by rational profit-maximization when there is no prospect of liability (an exception is Scharfstein 1984). Since the purpose of liability is to deter predation, it is important to understand how different adjustments to the legal regime influence firms’ *ex ante* behavior, a point developed further in section 4.2.⁸⁰

⁷⁸A theme of a Justice Department report (in significant part summarizing hearings at which a range of views was presented) was that the modern literature does shift our understanding of predatory pricing but does not readily translate into workable guidance. *See* U.S. DOJ (2008, 54–58); *see also infra* note 81 (quoting Roberts).

⁷⁹This limitation generates some of the skepticism presented by Elzinga & Mills (2001), which is discussed further in Bolton, Brodley & Riordan (2001).

⁸⁰Both incumbents’ and entrants’ actions may influence the prospect of liability, which feeds back on what they would find rational. Note further that many modern theories depend on the information structure, including how a firm’s actions will depend on their interpretations of the other firm’s behavior; if that is not complicated enough, enforcement

Courts cannot be expected to update and refine the law optimally unless a sufficient foundation exists and, moreover, is effectively presented by litigants, both lawyers and experts. In this respect, it does not appear that key decisions forming predatory pricing doctrine have benefited from the presentation of core elements of then-prevailing economic wisdom.⁸¹ This latter point applies as well to modern empirical work, considered next.

The Supreme Court's emphasis on the supposed rarity of predatory pricing showcases the relevance of empirical evidence to the formulation and application of legal rules on the subject. Whether with reference to substantive rules or the level of proof required to assign liability, beliefs about the prevalence of various explanations for a category of behavior are important.⁸² More specifically, empirical understandings of the subject bear on which possible competing explanations for alleged predatory pricing most merit analysis and how to identify and assess relevant evidence. As mentioned, the literature relied on by the Supreme Court in its key decisions, *Matsushita* and *Brooke Group*, was dated on arrival.⁸³ In that time period, a consensus was emerging that predation was more frequent in contested cases than had previously been suggested and that there had been prominent historical episodes of predatory pricing (*see, e.g., Bolton, Brodley & Riordan 2000, 2243–47; Kaplow & Shapiro 2007, 1196–97*).

affects all of this and, put the other way, when enforcers are attempting to interpret an alleged predator's behavior, it is necessary to assess how one might, based on observable information, determine what game the apparent behavior appears to be an equilibrium of. Such subtleties reinforce the question raised at a number of points in this article about the comparative reliability of ex post expert reconstruction in litigation versus reliance on firms' internal documents, as best they can be interpreted.

⁸¹*See, e.g., Bolton, Brodley & Riordan (2000, 2257)*. It is interesting that the initial outpouring of legal commentary in the mid- and late 1970s—starting with Areeda and Turner's (1975) seminal article and quickly followed by other prominent legal and economic commentaries (*see, e.g., sources cited in Kaplow & Shapiro 2007, 1198*)—predates by less than a decade the modern work in industrial organization economics on the subject, which was substantial enough by the end of the 1980s to warrant a major survey (Ordover & Saloner 1989) in the first volume of the *Handbook of Industrial Organization*. Despite these and subsequent developments, the legal and economic commentary directed at antitrust law on predatory pricing did not fundamentally reconsider how the subject should best be approached. *See, e.g., Comanor & Frech (2015, 260–61)* (“A striking feature of the theoretical economics literature on predatory conduct is the minimal role that is played by costs. They are not the pivotal factor that is emphasized in the Areeda–Turner approach. What instead are important are the expectations that firms have of each other. . . . In this context, costs by themselves[] are unimportant except through their influencing firms' expectations.”); *Kaplow & Shapiro (2007, 1199); Ordover (1998, 83); see also Roberts (1987, 185–86)* (“In summary, we see that the presumption toward which the profession seemed to be moving five years ago—that predation does not make sense—does not hold up if one believes that the sort of informational asymmetries considered here are present in real markets. Instead, predation can easily be part of a rational strategy However, this does not mean that the policy conclusion to which the McGee arguments led—that predation probably ought not to be illegal—is necessarily wrong. . . . [E]ven when predation is not ineffective, it need not involve below-cost pricing, post-entry output expansion, or any of the other patterns of behavior that are easily recognizable and have been proposed as tests for predation. Instead, establishing that a particular pattern of behavior was in fact predatory may involve determination of intent, plus a very detailed reconstruction of informational conditions. Although prosecuting predation under such a standard of law might represent a bonanza for lawyers and expert economic witnesses, it would not obviously be more desirable socially than simply allowing predation.”).

⁸²As will be explained in section 4.2, the manner in which they are relevant is more subtle than is generally appreciated in settings, such as predatory pricing regulation, in which the core enforcement considerations relate to ex ante incentives.

⁸³Another curiosity is that, in *Cargill, Inc. v. Monfort of Colorado, Inc.*, 479 U.S. 104 (1986), decided shortly after *Matsushita* (and jointly drawn on in *Brooke Group* regarding recoupment), the Court rejected the argument that competitors should be disallowed from challenging mergers that allegedly generate opportunities for predation because, “[w]hile firms may engage in [predatory pricing] only infrequently, there is ample evidence suggesting that the practice does occur.” 479 U.S. at 121. *Cargill* was authored by Justice Brennan, who dissented in *Matsushita*.

There are, nevertheless, significant limitations on current empirical understanding. The actual prevalence of predatory pricing is neither known nor readily ascertained. It is difficult to identify activity that often is hidden, the definition of which is contested, and the existence of which depends on subtle factors. There has also been insufficient attention to the pertinent notion of frequency. If one considers the economy as a whole and asks what fraction of all price reductions involve predation (under any plausible conception), the answer is that it is minuscule. More relevant, however, is how often actual predation exists in the subset of cases that enter the legal system and seem to look like predation. Here, knowledge is limited, and the answer is obviously substantially endogenous to the legal regime itself: the formally stated rules for predatory pricing, how enforcement agencies make their decisions, the incentives of private litigants, and how tribunals analyze the evidence and decide motions (which feeds back on litigants' incentives; *see* Katz 2006, 9). Another challenge is that economists have devoted only modest attention to developing empirical methods that identify predatory pricing—including, specifically, tests that distinguish predation under various of the modern theories from particular competing explanations. Likewise, little is known about the relevant magnitudes, particularly the costs of chilling procompetitive conduct. Last but not least, the most important but unstudied question for enforcement policy is how adjustments to various enforcement levers—such as changing a test for predation or altering the extent to which recoupment must be demonstrated—would influence the degree of deterrence and of the chilling of beneficial behavior.

4.2. Dictating Conduct versus Providing Incentives

Until now, the analytical framework corresponds to what is conventionally termed decision analysis (*see, e.g.,* Raiffa 1968). One engages in classification: a determination of the probabilities that an act before a tribunal is of the harmful or benign type (say, illegal predatory pricing versus accommodation). Those probabilities, in turn, are used to weight the magnitudes of the respective effects (anti- and procompetitive). Together, these indicate whether the expected benefits of assigning liability exceed the expected costs.

Stepping back, this familiar formulation of the decision problem takes as given an existing situation—here, the act that has occurred—and asks what is the optimal legal treatment. The analogy to medical decision-making is clear: we ask how our treatment decision will influence the outcome going forward for the current patient. Returning to the legal context, this framing of the problem is most apt when the legal decision will dictate the future conduct of a party before the tribunal, such as a decision whether to prohibit a proposed merger or to enjoin particular actions by a firm.

By contrast, in many law enforcement settings the focus is on *ex ante* effects. Indeed, this is the primary orientation of predatory pricing enforcement. The purpose is to deter actual predation, and the core unwanted side-effect is that the prospect of the mistaken imposition of sanctions will chill beneficial price reductions.

The correct formulation of the decision problem when the concern is with the shaping of incentives for firms' behavior rather than dictating particular firms' future conduct is qualitatively different, regarding both classification and magnitudes (*see* Kaplow 2011, 2012a,

2014).⁸⁴ The correct classification-related question is not the (Bayesian posterior) probability that the act before the tribunal is of one or another type. Instead, it concerns the degree to which *changing* the liability determination in one manner or another—i.e., changing the information set that maps to liability—alters the deterrence of harmful acts and the chilling of benign acts. And the relevant magnitudes are not the harm or benefit associated with permitting the act before the tribunal but rather the marginal harm and marginal benefit associated with the change in the degree of deterrence and chilling that results from the change in incentives associated with the contemplated change in the assignment of liability.

With regard to predatory pricing, and the recoupment condition in particular, the relevant inquiry can be stated as follows: Starting from some initial demarcation with regard to the circumstances in which liability is and is not assigned, suppose, for example, that we raise the required demonstration of the likelihood of recoupment slightly. The result will be that some marginal cases—in which the overall evidence was barely sufficient—will no longer give rise to liability. The effect on *ex ante* behavior of such a change would be to reduce somewhat both deterrence and chilling.⁸⁵ Each of those reductions can then be multiplied by the respective consequences: the magnitude of harm in those instances of actual predation that are no longer deterred and the magnitude of benefits in those instances of procompetitive pricing that are no longer chilled. Weighing these two effects will determine whether the marginally stricter recoupment demand is socially desirable. Engaging in such analysis for different strengths of proof with regard to recoupment would determine the optimal recoupment demand in a particular set of circumstances, holding all else equal.

The same logic applies to any other dimension of proof. In principle, interacting them all allows one to determine the optimal boundary between liability and no liability. If the only question was the analogue to classification, then the optimal proof requirement with respect to all the evidence would be a likelihood ratio test. That is, liability would optimally be assigned if and only if the likelihood ratio exceeded some threshold. The likelihood ratio is the likelihood that the overall set of evidence would be generated by predation divided by the likelihood that the same set of evidence would be generated by procompetitive pricing (*see, e.g.*, Kaplow 2012a, 812–13; 2014).

Elaborating this somewhat dense statement helps to explain how triangulation fits in. The likelihood ratio is a property of all of the evidence, taken together. In principle, there is no privileging of any particular piece of evidence or cluster of evidence—whether from a specific

⁸⁴As a brief guide, Kaplow (2014) provides an intermediate exposition of the similarities and differences, and Kaplow (2012a) and Kaplow (2011), respectively, offer more extended informal and formal analyses. Of course, there are also mixed cases. For example, although merger approval decisions dictate future conduct, it is also true that anticipation of the merger approval decision may affect incentives to identify merger partners and, before that, to engage in various investments with payoffs that are in part contingent on future merger prospects. In that event, one must combine the two types of analysis.

⁸⁵For each of these effects, the magnitude will be given (for the risk-neutral case) by the product of the resulting decrease in the expected sanction for the type of act and the density of marginal acts of that type (that is, how often firms' benefits from the contemplated type of act just equal the expected sanction, for these are the acts that are deterred or chilled at the margin). *See, e.g.*, Kaplow (2012a, 764–66, 768). These factors, in turn, will differ across various possible predation strategies and competing explanations for the allegedly predatory conduct. One consequence is that the optimal proof requirements would correspondingly differ. (This point is in addition to the fact that the magnitudes of harm and benefit from deterrence and chilling, respectively, also may differ greatly across these competing explanations, a point emphasized in section 3.5.)

source (such as internal documents or regression analysis) or pertaining to a specific subject (such as recoupment or entry conditions). The likelihood ratio is higher whenever the evidence as a whole is relatively more likely to be generated by an anticompetitive act than by a procompetitive one. And the magnitude of the likelihood ratio is central because the effects of liability on deterrence relative to chilling are greater (all else equal) the higher is the likelihood ratio, without regard to whether, say, a high likelihood ratio resulted from strong evidence on the pricing being predatory combined with dubious evidence on recoupment or instead from weaker evidence on the pricing itself combined with strong evidence on recoupment. The principle of triangulation, wherein all the evidence is considered together (including possible interactions among different sorts of evidence), is correct with respect to the classification analogue when the design of legal rules is concerned with the provision of incentives, just as it is for assigning (Bayesian posterior) probabilities (starting with Bayesian priors) in decision analysis. In this respect, the previous discussion of classification—which, for ease of exposition was largely presented in the frame of decision analysis—remains applicable.⁸⁶

To reinforce a previous point, there is no need under either decision analysis or analysis concerned with ex ante incentives to reach a separate conclusion on any particular aspect of the inquiry, such as the likelihood of recoupment. Relatedly, it is inappropriate in principle to apply a distinct evidence threshold to recoupment or any other intermediate consideration. As explained, to ascertain the relative impact on deterrence versus chilling, one is concerned with the likelihood that the overall set of evidence would be generated, conditional on one or another explanation (the anti- or procompetitive one) being correct.

This logical point is nevertheless consistent with it sometimes being useful—as a heuristic—to clump evidence into certain subsets in order to analyze separately various aspects of a problem, such as the recoupment condition. This sort of compartmentalized approach tends to be most helpful when certain parts of the overall analysis are largely independent, in which case one can analyze each component separately and then combine the sub-conclusions into a single overall conclusion in an appropriate manner without significant loss of information. However, much of this article indicates that, in the case of recoupment and predation analysis more broadly, such separability often does not hold even approximately, with the result that analysis can go astray by too strong an insistence on examining recoupment in isolation. A looser heuristic approach may be appropriate even when inquiries are not substantially independent, because compartmentalization can help focus thinking and avoid overlooking important angles if one, say, employs a checklist of potentially relevant factors. The present article does not reject the use of such decisional aids or the idea that recoupment analysis should be on the list. Rather, it seeks to make more explicit the interconnections among the items in

⁸⁶For readers unfamiliar with the difference between decision analysis and the analysis of the incentive effects of legal rules or other incentive schemes, it may be helpful to explain why, under the latter, the Bayesian posterior probability is not relevant. That probability answers the question: How likely is it that the act before the tribunal is of the harmful rather than the beneficial type? But the *consequence* of the *prospect* of assigning liability in a given scenario rather than exonerating the defendant is to raise the ex ante probabilities of liability for both harmful and beneficial types of acts (typically, by different amounts), which in turn augments deterrence and chilling. Hence, a key component of the analysis of optimal liability determination is how *changes* in the way liability is expected to be determined translate into *changes* in actors' ex ante decisions, which inquiry is qualitatively different. For informal elaboration of the connection between the underlying distributions of opportunities for different types of acts and these different factors, including the Bayesian posterior probability, see Kaplow (2012a, 786–89).

order to improve reasoning with regard to the ultimate question.

Distinguishing between competing hypotheses is only part of the story, a point elaborated in sections 2.4 and 3.5. Under both decision analysis and the analysis of rules that influence ex ante incentives, we must also consider the magnitude of the impacts of liability on different types of acts. Much evidence—including some that is relevant to recoupment—also bears on these magnitudes. For decision analysis, the optimal assignment of liability depends on the expected (average) magnitudes of harm and benefit in light of the evidence at hand regarding the act before the decision-maker. With respect to rule changes that affect ex ante incentives, we are instead concerned with these magnitudes for marginal acts: acts that would, for example, be deterred or chilled by a slight relaxation of the liability threshold.

To elaborate, return to our formulation of the problem of optimally designing legal rules that influence ex ante incentives. Our question is how some particular adjustment to a rule, say, some increase in an evidence threshold, influences behavior. The influence would be through a reduction in deterrence and in chilling. In addition to estimating the size of these two effects on behavior, one must also consider their impact on welfare.

The acts no longer deterred or chilled will be marginal ones⁸⁷ in the following sense: they will be those acts that, under the heightened standard for liability, face expected sanctions just low enough to render them attractive, but that, under the previous looser standard, had expected sanctions that were just high enough to make commission of the acts ex ante unprofitable. Note that acts, both anti- and procompetitive ones, with benefits to firms exceeding the initial corresponding expected sanctions will remain undeterred or unchilled, respectively. And acts of both types that have low enough benefits to already have been deterred or chilled by a substantial margin will remain so after a slight tightening of the standard for liability.

Stepping back, if we wish to determine optimal proof demands for predatory pricing, we must combine this incentive provision framework with the teachings of the modern literature on predatory pricing that was the focus of section 4.1. That is, the models and empirical evidence on predatory pricing are the inputs to the optimal enforcement framework sketched here. Because, as mentioned, most of the economics literature on predation abstracts from law enforcement, further work integrating these two literatures would be helpful.

4.3. Ex Ante versus Ex Post Perspectives on Recoupment

The demand for recoupment is ordinarily understood to be satisfied if the recoupment condition holds either ex ante or ex post—that is, if the alleged predator’s expected profit recovery exceeded its expected short-run profit sacrifice or if the actual recovery exceeded the

⁸⁷Consider how acts just at the margin of being deterred or chilled differ from average acts among the set that are committed (which is to say, are undeterred or unchilled). Taking harmful acts, inframarginal undeterred acts have higher benefits to firms than marginal acts generate. Note that, among inframarginal acts, those nearest the margin of being deterred have the lowest private benefits of that set, and hence the marginal benefit is lower than the average benefit. Therefore, if firms’ benefits relate positively to harm (benefits being in the form of monopolistic profits), those just deterred will be less harmful than undeterred acts, so marginal harm is less than average harm. For beneficial acts that may be chilled, the logic is analogous. Here, we would typically suppose that greater private benefits of (procompetitive) acts indicate greater social benefits. Hence, the marginal chilled act results in a forgone social benefit that is lower than that from the average unchilled act and greater than that from acts that were already chilled.

actual sacrifice.⁸⁸ However, little attention has been devoted to whether one or the other should suffice rather than requiring one in particular or insisting on both. Perhaps requiring ex ante recoupment is thought to be correct, but, because it is difficult to ascertain in litigation, a challenger's demonstration that ex post recoupment in fact occurred permits or requires an inference that recoupment was plausible ex ante. Regardless, the matter should be examined explicitly, with attention to problems of proof and matters of policy.

Assessment of different ways of proving recoupment, whether ex ante versus ex post or any other, is necessarily subordinate to the prior discussion of recoupment's appropriate role in the optimal determination of liability. Confining attention to classification, the preceding section (like section 2.3) emphasizes that appropriate analysis does not involve a separate decision regarding recoupment in any event. Rather, recoupment's relevance arises from how it helps us triangulate on the proper characterization of a defendant's alleged predation. Hence, the appropriate weight to put on evidence that bears on ex ante or ex post recoupment must be derived from how either or both sheds light on this ultimate question. That said, it may be helpful as a heuristic to consider recoupment and the difference between ex ante and ex post recoupment as such, and it eases exposition here to discuss them as if they were distinct questions, all the while keeping in mind that in this central respect they are not.⁸⁹

In considering these two types of evidence in the triangulation process, it is helpful to keep in mind the refinement of anticompetitive understandings of predation in light of the different sorts of theories mentioned in section 4.1. For example, when it appears that an alleged predator may be trying to establish a reputation for toughness that will be valuable in multiple markets, it might not rationally expect to recover its short-run profit sacrifice primarily in the market at hand but rather mostly in the other markets. In that case, a failure of ex post recoupment, narrowly viewed, would not be particularly probative, whereas a failure to keep out entrants in the other markets would be. And in some models of predation, a predator is uncertain about prospective entrants' costs, so ex ante profitability need not imply ex post success (*see* Benoit 1984; Easley, Masson & Reynolds 1985).

Another important consideration bearing on the appropriate weight to give to evidence on ex ante and ex post recoupment concerns the reliability of each. Section 2.2, which states the recoupment condition and elaborates its components, makes clear how difficult it may be to determine whether the inequality is satisfied. For ex ante recoupment, one must identify the contours of alternative scenarios: predation versus accommodation in the short run, and monopoly versus accommodation in the long run. Each requires information about demand, the firm's cost structure, and other matters, much of which will be difficult to extract, in order to impute the pertinent behavior so that one can then compute the relevant profit terms. Moreover, the weighting factors require ex ante determination of such matters as how long the predation period will last and how long any accretion to market power will continue. It is challenging to estimate all of these components in order to assess whether the ex ante condition was met through a battle of experts in ex post litigation. As mentioned, it may be easier, or at least a

⁸⁸*See, e.g.,* Brooke Grp. Ltd. v. Brown & Williamson Tobacco Corp., 509 U.S. 209, 232–33 (1993); Calkins (1994, 399–401) (discussing what the *Brooke Group* Court meant in this regard).

⁸⁹Using the incentive provision formulation in section 4.2, we can ask, for example, how assigning liability rather than no liability influences deterrence relative to chilling when there is slightly stronger evidence on the ex ante prospect of recoupment versus slightly stronger evidence on whether recoupment in fact occurred.

useful supplement, to consider a defendant's internal documents regarding its strategic calculations and other matters, although it is familiar that this too can be misleading. In sum, determining ex ante recoupment will often be quite difficult in serious cases, which is a significant part of the reason that often recoupment analysis may not optimally be given great importance in the triangulation process—all depending on what one learns from other relevant evidence.

Determination of whether ex post recoupment occurred—to the extent relevant, as discussed above—may sometimes be more feasible. We have the advantage that we may be able to observe what happened (assuming that, at the time of adjudication, the entire process has run its course; if not, only factors bearing on the short-run profit sacrifice may be observable). One should not forget, however, that each side of the recoupment condition involves the difference between two situations, at least one of which is counterfactual. Moreover, since it will be disputed which situation occurred, it will usually be unclear which of the two we did in fact observe. (And, if we did know, we would already have an answer to whether predation occurred.) Hence, many of the challenges in determining ex ante recoupment carry over to the assessment of ex post recoupment. Moreover, if one is examining ex post recoupment primarily to illuminate whether the ex ante recoupment condition was likely to have held, there are obvious dangers of hindsight, notably, as mentioned, when ex ante recoupment is consistent with ex post failure due to uncertainty. (This is not to deny that, in less serious cases, the result may be obvious, and disposing of such cases is extremely important both in its own right and because it helps to discourage the filing of weak cases.)

There is another potential problem with significant reliance on ex post recoupment: it can create perverse incentives for targeted rivals to flop. If a targeted firm folds immediately, the short-run profit sacrifice will be negligible, virtually guaranteeing that the recoupment condition, viewed ex post, will hold.⁹⁰ Relatedly, if it strategically holds back on reentering, the alleged predator will enjoy greater profit recovery as well.

Accordingly, proper analysis of how much weight to give to ex post recoupment must take such incentives into account. This point is part of the broader argument advanced in section 4.1 about the need for the economic analysis of predation to be integrated with different enforcement regimes in order to inform predatory pricing policy. Theories of predation recognize the game theoretic setting involving strategic interaction between firms—in the simplest case, between a dominant firm and a single rival. The policy-relevant question is how different legal regimes will influence ex ante behavior. This article has largely focused on the ex ante behavior of alleged predators, regarding the deterrence of actual predation and the chilling of other conduct. But a complete analysis of predation, and thus of enforcement, necessarily includes the behavior of rivals. Predation by dominant firms is specifically motivated to influence rivals' behavior: their entry and exit, or perhaps their pricing (when the predation aims to discipline rather than eviscerate the competition). Enforcement is designed to alter firms' strategic behavior, and the behavior of all firms must be taken into account. Usually, that

⁹⁰In this regard, it is interesting to ponder whether Spirit Airlines' quick exit, *see* Spirit Airlines, Inc. v. Northwest Airlines, Inc., 431 F.3d 917 (6th Cir. 2005), was in part motivated by the advice of counsel that, if they attempted to stay and fight, they would be undermining a potential predatory pricing case (which they won, at the stage on appeal, in part because the recoupment analysis was quite favorable). In subsequent policy hearings, Elzinga (2006, 15), a plaintiff's expert in *Spirit Airlines*, remarked that "one key to the success for Northwest was simply how quickly Spirit exited."

involves attention to how deterring predators will empower rivals, but here we must consider as well possible perverse incentives that some legal rules might generate for rivals.⁹¹

Consider now some additional questions of legal policy. First, it is useful to reflect on the reasons it may be optimal to assign liability when there is *ex ante* but not *ex post* recoupment, or, putting the matter more broadly, when, as best we can tell, a defendant was engaged in actual (and otherwise illegal) predation that turned out to fail. In essence, the argument for liability in such situations is a species of that for punishing failed attempts more generally. As is familiar, acts that would be crimes if successful are usually punished (although often less harshly) when the attempt to commit such acts is unsuccessful. (It is surprising how little attention has been given in the antitrust literature to the logic of punishing attempts as such—all the more so with monopolization because Sherman Act Section 2 explicitly proscribes attempted monopolization and *Brooke Group* itself addressed the framing of attempted monopolization.⁹²)

The core argument for punishing attempts concerns deterrence (*see* Shavell 1990).⁹³ Because deterrence can also be augmented in other ways, such as by raising the penalty for success or boosting the probability with which successful attempts result in the imposition of sanctions, the analysis is a comparative one. Here, the central concern is the tradeoff between deterrence and chilling when tightening different dimensions of enforcement.⁹⁴ This tradeoff depends on the strength of different types of evidence. Notably, some attempts may be clearly established despite their lack of success, making them attractive targets for liability, and some

⁹¹Concerns for flopping tend to favor allowing only suits by the government, with no damages recovery to rivals in the event of liability (but with some substitute, such as fines, paid to the government to maintain deterrence). Pushing the point further, the purpose of predatory pricing enforcement is to deter predation, which in turn will induce more beneficial entry, but the prospect of liability might also induce entry that is undesirable but made attractive either by chilling effects or the prospect of collecting damages.

⁹²By contrast, TFEU Article 102—the analogue to Sherman Act Section 2—punishes the abuse of dominance but does not cover attempts. *See, e.g.,* Geradin, Layne-Farrar & Petit (2012, 175); O’Donoghue & Padilla (2013, 141). The proscriptions on monopolization and attempted monopolization (where present) are puzzling. Consider a continuum in which 0 corresponds to perfect competition and 100 is (just barely) the point that the law designates as “monopoly” for purposes of Section 2 (or “dominance” under Article 102). A firm at 99 is permitted to engage in any unilateral anticompetitive acts to stay at 99, rather than having its score fall, even all the way to 0, as long as those acts do not involve a dangerous probability of raising its score to 100. Moreover, a firm at 0 is permitted to engage in any unilateral anticompetitive acts to reach 99, as long as it is clear that it will stop short of 100 (perhaps it agrees to abstain once it hits 99), for there is no dangerous probability of monopoly (100). However, an anticompetitive act that moves a firm from 99 to 101 would constitute monopolization, and an anticompetitive act with a dangerous probability of moving a firm from 99 to 101 would constitute attempted monopolization. Although there is substantial justification for circumscribing the liability of dominant firms for so-called unilateral acts due to their ubiquity and often their ambiguity (with regard to whether they are truly anticompetitive rather than procompetitive), it is hard to make sense of this particular structure for the law, the implications of which do not seem to be appreciated. Among other considerations, it seems unlikely that we would often be more confident that assigning liability was optimal with respect to an act with an apparent anticompetitive effect of moving the needle from 99 to 101 than for one with an effect of moving it from 0 to 99, or anything close to such a swing. Of course, it is possible that the law is not applied in anything approximating what is depicted here. The insistence on some substantial market power may serve important screening functions, particularly if tribunals find it more difficult to determine which acts are anticompetitive (supposing greater confidence in market power assessment, including in attempts cases, the present subject—where it is sufficient to demonstrate that the alleged anticompetitive acts will generate significant market power).

⁹³Deterrence is not the only reason to punish failed attempts. With attempted murder, for example, incapacitation may be favored because there may be a significant revealed risk that the unsuccessful perpetrator would try again.

⁹⁴For general treatments of the tradeoffs involved, see Kaplow (2011, 2012a, 2013, 2017b, 2017c).

cases of apparent success may be poor targets for liability because of uncertainties about whether they involved true predation rather than some other, beneficial behavior. Subjecting attempts to liability tends to be particularly precarious when the failure itself casts significant doubt on the classification, the analogue here being when a failure of ex post recoupment in some situation makes the predation explanation particularly implausible.⁹⁵ On the other hand, when a defendant's action almost surely involved predation—rather than procompetitive investment or accommodation—but success is very difficult to prove, it tends to be desirable to assign liability even if the act might involve a failed attempt. Consistent with this article's triangulation theme, therefore, liability is likely to be optimal for some attempts that failed or whose success is uncertain, but not others.

Second, and really the flip side of the foregoing, it may sometimes make sense to place heavy reliance on ex post success and, relatedly, on ex post recoupment. As already explained, as difficult as this may be to determine, analyzing ex ante recoupment may be substantially more challenging. In such cases, it may be optimal to demand ex post recoupment or other indications of success, such as whether a rival was actually extinguished or disciplined. A corollary is that, in such instances, it may be necessary to limit challenges to fully consummated predation, for otherwise it may be impossible to gauge success.⁹⁶ Observe that, to this extent, one would essentially be eliminating liability for attempts.⁹⁷

5. CONCLUSION

Consideration of whether a firm alleged to have engaged in predatory pricing can have expected to recoup its short-run profit sacrifice through a subsequent enhancement to profits has become a central consideration under U.S. antitrust law and plays a role in other jurisdictions. Yet fundamental questions remain unanswered, with many unasked. How can one reconcile recoupment's failure due to a large, unrecoverable short-run profit sacrifice with a claim that there was no predation and hence no profit sacrifice in the first place? How can the assessment of recoupment be diagnostic when competing explanations for alleged illegal predation likewise requires recoupment, as many do?

To answer such questions, this article grounds recoupment analysis in a framework for the optimal determination of liability. Recoupment may be relevant because it aids in classification: the determination of whether conduct involves actual predation or some other, procompetitive behavior. Central to any such inquiry is careful up-front specification of the two (or more) competing explanations for the alleged predator's conduct, which is rarely done.

⁹⁵Another argument against liability for attempts or, conditional on assigning liability, in favor of reduced sanctions, is that some attempts may, as a consequence of their failure, reveal themselves to be less dangerous and hence less in need of deterrence. It was already explained in section 2.4 how some factors militating against recoupment also suggest that the predation (if indeed that is what occurred) would be less harmful.

⁹⁶A related idea is the suggestion by Easterbrook (1981, 331–33) of eliminating suits by competitors. If only customers can sue, and if their damages are contingent on the extent of price elevation in the recovery period, then suits are limited to predation that is at least partly successful (although customers might also sue for injunctions).

⁹⁷In addition, one would be eschewing the opportunity to stop the predation before it could have its anticompetitive impact, relying entirely on deterrence—and in that regard, without the deterrence supplement provided by the punishment of attempts.

Recoupment may also bear on the magnitude of potential deterrence gains and chilling costs, channels of relevance that are also typically ignored.

This article first states the recoupment condition itself. Inspection immediately reveals that it is more complex and subtle than is appreciated. Notably, an alleged predator's cost structure (including its incremental cost of a predatory quantity increase) is relevant in numerous ways, undermining the view that recoupment analysis can be performed without confronting the challenge of examining costs.

Next, the logic of the recoupment inquiry is elaborated. In seriously contested cases in which recoupment may be decisive, there will exist both nontrivial evidence that predation occurred, which itself implies that the recoupment condition is satisfied, and also evidence that casts recoupment into doubt, which calls into question whether predation took place. These competing inferences can only be reconciled through a process of triangulation that considers together all the evidence bearing on predation (contrary to proposals and practice) and recognizes that recoupment is of derivative significance: that is, it is important because of how it bears on the likelihood and magnitude of anti- and procompetitive effects, not in its own right.

Alternative explanations for alleged illegal predation are a central focus here because proper recoupment analysis depends qualitatively on what types of behavior are being distinguished. If the alleged predation is claimed to involve what is in essence a procompetitive investment—such as product promotion that entails short-run losses to generate future profits—recoupment is not diagnostic in a simple manner because this alternative hypothesis requires recoupment as well. Moreover, in particular cases it may require a greater long-run profit recovery than predation, in which event a limited ability to recoup would actually favor liability.

The primary, often implicit, competing explanation is that there was no predation, just accommodation: that is, the alleged predator charged the short-run profit-maximizing price in light of the new competitive circumstances resulting from entry. Then recoupment is diagnostic, but the matter is surprisingly subtle. Strong evidence of a large short-run profit sacrifice does make demonstration of recoupment more difficult, but it more directly rules out accommodation because it contradicts that a short-run profit-maximizing price was charged.⁹⁸

If instead the competing explanation is *legal* predation—profit sacrifice to drive out rivals without pricing below the pertinent measure of cost—recoupment analysis is not obviously diagnostic because legal predation itself is rational only if the firm expects to recoup its losses. Recoupment inquiries may nevertheless be helpful, but the proper analysis is highly refined.

Differences among alternative explanations for illegal predation are also important for reasons having to do with the magnitude of procompetitive benefits that may be forgone due to the prospect of the mistaken imposition of liability. A concern for chilling effects guides the formulation of predatory pricing rules as well as the analysis in particular cases. Yet their magnitude varies greatly across contexts: false positives are not created equal. Even when the competing explanation is mere accommodation, the consequences of chilling can be large or small. (For example, if entry by equally efficient competitors is easy, which tends to negate predation because significant long-run profit recovery is implausible, chilling costs also tend to

⁹⁸As explained in section 3.2, however, a defendant might consistently argue both that it did engage in accommodation and thus incur no short-run profit sacrifice and also that if it had engaged in predation, the short-run profit sacrifice would have been large enough to exceed any plausible long-run profit recovery.

be small.) If the alleged predator is actually undertaking procompetitive investment—such as when young tech companies incur substantial losses when developing new products and entering new markets—the costs of chilling may be immense. When it is legal predation that is chilled, by contrast, chilling costs can be negative, which is to say, benefits. Once again, we can see that it is essential to consider explicitly just what is the alternative explanation for the defendant’s actions, rather than (as is usually done) leaving the matter vague until the end of the inquiry (if one gets that far).

Much of this article’s examination of recoupment bears more broadly on predatory pricing analysis and on the understanding of other exclusionary practices. In this regard, it is notable that modern economic analysis of predatory pricing, both theoretical and empirical, has not had much impact on current doctrine and practice. In part, this gap reflects the absence of sufficient elaboration in economic research to address more directly competition law’s challenges: distinguishing competing explanations for a defendant’s actions, measuring the magnitude of effects (particularly chilling costs), and determining the impact of various enforcement strategies on deterrence and chilling. The latter task is central yet daunting, for the relevant policy question is how various changes in the legal regime—whether in substantive legal rules or in the degree of different types of proof that are demanded—translate into changes in firms’ ex ante behavior. A question of particular interest regarding the recoupment condition is the extent to which the legal regulation of predatory pricing should focus on demonstrated success (where ex post recoupment occurs) or also encompass attempts, some of which may be failures (where an ex ante recoupment condition is satisfied but not an ex post one).

As explained in a companion article (Kaplow 2018b), the doctrinal development of the recoupment requirement in U.S. antitrust law exhibits what seems to be an idiosyncratic path dependence, influenced greatly by atypical features of the cases reaching the Supreme Court and by what types of arguments and information were (and were not) presented by the litigants. In any event, those cases and subsequent lower court decisions do not reflect an appreciation of most of the considerations elaborated here. Nor do reports produced by U.S. and EU competition agencies. Moreover, existing and proposed structured decision rules—which seem increasingly in vogue with some commentators—attempt to mold analysis in ways that are starkly at odds with the logic of optimal decision-making. Such structures disrupt rather than encourage the sort of triangulation that is necessary when there are competing explanations for a defendant’s conduct and conflicting evidence. Recoupment analysis itself is a derivative inquiry with multiple determinants, many of which are relevant in other ways, rendering incoherent the notion that recoupment should be examined in isolation from the anti- and procompetitive explanations for the alleged predator’s conduct.⁹⁹

To improve doctrine and practice, as well as to guide future research, it is necessary to begin by enhancing understanding, which is the purpose of this investigation. Progress cannot be quick or easy because of the subtlety of the problem and gaps in existing knowledge. Nevertheless, this article—along with the companion paper and other recent work (Kaplow 2017a, 2019)—aims to provide some lessons regarding recoupment, predatory pricing, and the analysis of anticompetitive behavior more broadly, including:

- Both anti- and procompetitive explanations need to be identified with some

⁹⁹Kaplow (2018b) and Kaplow (2017a) consider how recoupment and various other aspects of a complete analysis might nevertheless be employed in screening out weak cases.

specificity at the outset because characterization is inherently comparative. The relevant evidence and analysis depend on both.

- The magnitudes of deterrence benefits and chilling costs depend qualitatively and quantitatively on the particular anti- and procompetitive explanations. Notably, forgone procompetitive benefits can be large, moderate, or even negative (that is, costs). These magnitudes are important because the liability decision involves uncertainty about characterization.
- The recoupment condition must be stated and examined directly in order to undertake recoupment analysis. It is multifaceted and subtle, involves imputations for counterfactual scenarios, and requires understanding the alleged predator's cost structure, including the incremental cost of the predatory quantity expansion.
- Recoupment's relevance is derivative and deeply intertwined with the analysis of predation itself and of the competing explanation. Triangulation—rather than conducting independent analysis and reaching separate conclusions on recoupment and other factors—is required.
- Regarding all competing explanations for illegal predation, the appropriate recoupment analysis is notably more subtle than recognized.
- Ex post reconstruction by battling experts in litigation may not well illuminate whether liability should be assigned and may usefully be complemented by internal evidence.
- Screening by agencies and courts is appropriately undertaken in a flexible way that is derivative of the manner in which liability is optimally assessed.

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