A Three-Step Structured Rule of Reason to Assess Predation under Article 82

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TABLE OF CONTENTS

0 Executive Summary........................................................................................................... 2
1 What is Predation?............................................................................................................. 5
2 Economic Theory and the AKZO Rules........................................................................... 7
   2.1 A Quick Review of the Economic Theory of Predation.......................................... 8
       2.1.1 Predation to eliminate a financially constrained rival.................................... 9
       2.1.2 Predation to acquire a reputation for aggressiveness.................................... 9
       2.1.3 Predation to mislead rivals in believing the market is unprofitable............... 10
2.2 Cost-Based Rules Have Little in Common with Predation........................................ 12
   2.3 What Defense for the Legal Price-Cost Comparison?.............................................. 13
       2.3.1 There are many Pro-Competitive Justifications for Below-Cost Pricing........ 14
       2.3.2 Successful Predation on less Efficient Rivals can Reduce Consumer Welfare... 14
       2.3.3 The Difficulties in Measuring Cost and Prices Create Legal Uncertainty..... 16
   2.4 Conclusion................................................................................................................ 17
3 A Rule of Reason under Article 82 ................................................................................. 18
   3.1 Why a Three-Step Rule of Reason?.......................................................................... 18
   3.2 Other Structured Rules of Reason........................................................................... 21
4 A Three-Step Rule of Reason ......................................................................................... 23
   4.1 Likely Exclusion....................................................................................................... 23
   4.2 Likely Recoupment.................................................................................................... 25
       4.2.1 Treatment of recoupment in case law............................................................ 27
       4.2.2 Dominance as evidence of recoupment......................................................... 27
   4.3 Actual Profit Sacrifice Condition............................................................................. 29
       4.3.1 Incremental Revenues vs. Incremental Costs................................................ 30
       4.3.2 Other, More Profitable Actions.................................................................... 30
       4.3.3 Using Cost-based Rules as an Alternative.................................................... 31
   4.4 Legitimate reasons for profit sacrifice ..................................................................... 33
       4.4.1 Reaction to changes in market conditions..................................................... 35
       4.4.2 Market expanding efficiencies....................................................................... 35
   4.5 Is the proposed approach applicable to assess all exclusionary practices?.............. 36
5 An illustration: the American Airlines Case ................................................................. 38
   5.1 Evidence of likely exclusion.................................................................................... 38
   5.2 Evidence of likely recoupment................................................................................ 40
   5.3 Evidence of profit sacrifice...................................................................................... 40
       5.3.1 Using price and cost data.............................................................................. 40
       5.3.2 Other economic evidence.............................................................................. 42
       5.3.3 The dispute over costs.................................................................................. 43
6 Conclusion ...................................................................................................................... 45
7 References ....................................................................................................................... 47
0 Executive Summary

Predation is difficult to distinguish from legitimate and vigorous price competition. To detect predation, the European Court of Justice ("ECJ") set forth a price-cost test in its AKZO decision. In that case, the ECJ held that:

- Prices set by a dominant firm below its average variable costs are presumed abusive.
- Prices above average variable costs but below average total costs are abusive if they are intended to eliminate a competitor.
- Prices above average total costs are conclusively legal.

Unfortunately, the AKZO approach is not easy to apply. First, assessing costs and prices requires a cumbersome and hazardous investigation of the dominant firm’s cost structure and revenues. Second, price-cost tests are utterly inappropriate when competition is largely driven by factors other than price. Third, the concept of intent is too subjective to be operational. Absence of intent does not prove price competition while evidence of intent does not prove predation.

Most importantly, price-cost tests are formalistic and do not attempt to distinguish between hard-nosed competition that likely benefits consumers and true predation. Misidentification can lead to both over-enforcement (false positives) and under-enforcement (false negatives).

Over-enforcement results because below cost pricing is a poor proxy for predatory conduct: there exists a host of pro-competitive reasons justifying below-cost pricing. Over-enforcement encourages as efficient and less efficient rivals alike to make bogus complaints to a competition agency to fend-off aggressive competition by a dominant incumbent. Over-enforcement also promotes more collusive behavior in the market.

Under-enforcement may result for two reasons. First, difficulties in measuring, allocating and comparing costs (and prices) can frustrate even the most committed and resourceful agency. Second, above cost pricing can be predatory, potentially deterring (i) more efficient entrants, who have not yet reached sufficient scale or (ii) less efficient rivals, which partly exercise a competitive constraint on the predating firm. Under-enforcement may cause firms with significant market power to try to establish a reputation for toughness in order to deter entry into their markets.

In July 2005 a group of distinguished economists, advising the EU Competition authority (the EAGCP) published a report advocating an effects-based approach under Article 82. With respect to predation they support an explicit analysis of the rationality of predation given the economic circumstances of the case. They also call for less reliance on price-cost tests.

The EAGCP’s mandate was to focus on basic principles, not to provide concrete suggestions for guidelines. This paper is intended to bridge this gap. We propose a way to adapt legal rules to reflect modern economic thinking on predation - the primary idea stressed by the EAGCP.

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1 For example, in April 2001, a federal district judge dismissed the US DOJ’s claims that American Airlines had predated upon low-cost entrants by, inter alia, increasing the number of flights in the affected routes. The Court ruled that the Division had failed to prove below-cost pricing.

2 EAGCP stand for Economic Advisory Group on Competition Policy. It is a group of 15 academics working in the area of industrial organisation representing the different field of research and academic research centers in Europe.

Modern economic analysis has shown that predation can be a successful and fully rational business strategy in a real world of imperfect and asymmetric information. Predation involves an action that entails a profit sacrifice relative to some more profitable alternative but for the elimination or disciplining of rivals and the subsequent increase in market power. Thus, a rational profit-maximizing firm would never predate except if such conduct is (i) likely to exclude or discipline aggressive and (ii) the predator will be able to exercise increase market power and thus recoup its initial profit sacrifice, for example by raising prices beyond pre-predation levels.

Proof of predation involves showing that predatory conduct is economically rational and has taken place. To this effect, we advocate a three-step structured rule of reason. A competition authority adopting our approach would bring a predation case if there is convincing evidence that:

1. The defendant has sacrificed profits.
2. As a result, one or more rivals have or likely will be excluded from competing with the alleged predator in some market.
3. Once rivals are excluded, the alleged predator can exercise increased market power and thereby recoup the initial sacrifice.

Arguably, EU legal standards do not require any evidence that the alleged predatory scheme is rational (i.e. profitable). Hence, the need to show “likely exclusion” and “likely recoupment” could be seen as an additional burden on enforcement. In fact, the opposite is true.

First, it is not intrinsically difficult to establish the likelihood of exclusion and recoupment – it is more a matter of knowledge and experience. Indeed, as regards likely exclusion economic theory sets out simple and observable criteria to determine why rivals that are even more efficient may be excluded. Similarly, proof of likely recoupment is based on a forward-looking analysis of market structure post-exclusion – similar to that undertaken in merger control.

Second, the more convincing the evidence as regards likely exclusion and recoupment the less detail should be necessary to proof actual sacrifice. It is difficult to prove below cost pricing in most cases. In any event, it is always a contentious exercise. Yet evidence regarding profit sacrifice could be inferred, inter alia, from the existence of more profitable alternatives absent exclusion. In such cases, the Commission can challenge over-aggressive conduct where market conditions and other observable indicators support the claim that predatory conduct would be rational.

Of course, the defendant may successfully rebut the Commission’s findings regarding exclusion, recoupment and sacrifice. Beyond this, the defendant should also be allowed to invoke an efficiency defense. Seemingly predatory behavior can, in some cases, enhance efficiency and increase consumer welfare. Even rational predation may not be abusive if the defendant can show that the initial profit sacrifice leads to market expanding efficiencies. Such efficiencies must fully offset the incentive to raise prices resulting from the exercise of increased market power after rivals are excluded.

We believe a three-step structured rule reason is superior in all counts to the AKZO-based approach:

First, it is easier to administer. Profit sacrifice can be proven even without a complex and controversial analysis of average costs and prices and without entering into a futile and never-ending dispute regarding the relevant cost benchmark.

Second, the proposed approach reduces false negatives, in particular in cases of non-price predation. A comparison of prices and costs can be seriously misleading when firms compete primarily in dimensions other than price. In any event, it is always preferable to concentrate on establishing whether predation would be rational in the given circumstances.
Third, it reduces false positives by placing the focus on proving that a rational predatory strategy exists and that the predator has acted pursuant to that strategy. There is no predation if conduct is not rational. It may not be, either because it cannot credibly lead to exclusion or entry deterrence, or because some competition constraints will remain making the prospect of recoupment unrealistic. Over-enforcement can chill a large firm’s incentives to grow and innovate and it deters its incentives to pass-on to consumers the benefits of past investments. The risk of over-enforcement is further reduced by explicitly allowing the alleged predator to justify aggressive conduct in the market even if, despite its exclusionary effects it also leads to increased efficiency to the ultimate benefit of consumers.
1 What is Predation?

More than twenty years ago, Ordover and Willig (1981) articulated the modern definition of predatory behavior as a strategy:

"that sacrifices part of the profit that could be earned under competitive circumstances were the rival to remain viable in order to induce exit and gain consequent additional monopoly profit".  

Generally, the temporary charging of particularly low prices or an overly aggressive conduct whose immediate effect is to reduce the profitability of rivals is considered predatory only when the profit sacrifice is incurred for the sole purpose of:

(i) inducing exit
(ii) deterring entry into the predated market or other markets
(iii) lowering the cost of acquiring a competitor or
(iv) ‘disciplining’ rivals into permanently accepting relatively small market shares or collusive pricing.

As Bork (1978, p. 145) famously puts it, this sacrifice “is an investment on (future) monopoly profits”.

As the definition makes it clear, predatory behavior involves two distinct phases. In the sacrifice phase, the predator offers ‘too much’ value to consumers (e.g., its price is too low, its product or service quality is too high, or its product is too innovative) to reduce its rivals’ profitability. In the recoupment phase, the predator exploits the fact that its rivals have been weakened or excluded and reduces the value it offers to consumers below the competitive level. Thus, when a predatory scheme is successful, even though consumers benefit from unrealistically high value for money in the short run, they ultimately suffer due to the loss of competition. Recoupment of the initial loss takes place in the market where exclusion occurs, which may not be the same market where sacrifice takes place. For example, if the prey enjoys economies of scope or scale across markets, lost revenues in one market may force it to exit all markets simultaneously. Also predating in one market may create a reputation for aggressive behavior, which deters entry or discourages competition in other markets.

Different varieties of business conduct may be considered “predatory,” but they generally fall into two categories: predatory pricing and non-price predation.

- **Predatory pricing** is the best-known form of predatory behavior. It involves lowering prices, in most cases to an unprofitable level, in an effort to weaken, eliminate, or block the entry of a rival.

- **Non-price predation** often involves making excessive investments that have the objective and likely effect of weakening or eliminating competitors. Predatory investments could be made, for example, in excessive capacity, product differentiation, or advertising. Furthermore, businesses may adopt costly strategies designed to raise their rivals’ costs more than their own. Other forms of non-price predation involve technological tie-ins and exclusive contracting whereby a firm

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4 Economists have given various essentially interchangeable definitions of predation. In “The Antitrust Paradox” Bork defines predatory pricing as price cutting “that would not be considered profit maximizing except for the expectation that either (1) rivals will be driven from the market, leaving the predator with a market share sufficient to command monopoly profits, or (2) rivals will be chastened sufficiently to abandon competitive behavior the predator finds inconvenient or threatening”. P. Bolton, J. Brodley and M. Riordan (2001), define predatory pricing as “a price reduction profitable only because of the added market power the predator gains from eliminating disciplining or otherwise inhibiting the competitive conduct of a rival or potential rival. Stated precisely, a predatory price is a price that is profit maximizing only because of its exclusionary or other anticompetitive effects”. 
may increase the value offered to certain customers to reduce the ability of rivals to serve such customers and ultimately drive them from the market.\footnote{Some practices such as mixed bundling may be classified as predation when profitable if and only if rivals are excluded, leading to higher prices for the bundle or the individual components. On the other hand mixed bundling may also be a rational profit-maximizing strategy even in the absence of exclusion (e.g. because it leads to market expanding price discrimination). In such case the practice is not predatory but may be still be deemed exclusionary. Similarly, raising rivals’ cost strategies do not fall under the definition of predation given above if they are costless to the firm. This is because they do not involve “sacrifice”. Thus, its exclusionary character must be assessed according to a different set of conditions.}

Predation is difficult to distinguish from legitimate and vigorous competition. To detect predatory prices, the European Court of Justice (ECJ) in the AKZO judgment (1986) set a legal test based on a price-cost comparison. Although such cost-based rules are analytically simple, they are not grounded in economic theory. In fact, as we will show below, cost-based rules simply fail to correctly discriminate between what lawyers have coined “competition on the merits” from an “abuse of dominant position”. The AKZO price-cost tests and their variants, while potentially informative regarding actual sacrifice, are in fact neither necessary nor sufficient to demonstrate the rationality, and thus the existence of predatory conduct. As a result, the current European legal standard on predatory pricing leads to both over- and under-enforcement. The time is ripe for a substantial overhaul of the European legal rules on predation by taking into account the last twenty-five years of economic advancement.

Following Bolton, Brodley and Riordan (2000, 2001) we believe that improved legal rules should be based on modern strategic theories of predation. We propose, therefore, a structured rule of reason under Article 82 that should enable antitrust authorities and judges in Europe to distinguish predatory from competitive conduct. Our proposed framework sticks closely to the modern economic definition of predation. An action is predatory if it entails a profit sacrifice relative to some more profitable alternative, but for the elimination or disciplining of rivals and the subsequent increase in market power. In other words, predation is irrational unless this would exclude or permanently discipline rivals, allowing the predator to likely recoup the initial sacrifice. It follows that proof of predation involves showing three elements:

1. The defendant has \textit{sacrificed profits}.
2. As a result, one or more rivals have or likely will be \textit{excluded} from competing with the alleged predator in some markets.
3. Once rivals are excluded or disciplined, the alleged predator can exercise increased market power and thereby \textit{recoup} the initial sacrifice.

Conduct shown to conclusively meet these three conditions should not be deemed per-se illegal. Predatory behavior can, in some cases, enhance efficiency and increase consumer welfare. Even rational predation may not be abusive if the defendant can show that the initial profit sacrifice leads to market expanding efficiencies. Such efficiencies must be shown to fully offset the incentive to raise prices resulting from the exercise of increased market power after rivals are excluded, as explained in section 4.4.

The paper is structured as follows. In the next section, we explain why the current European legal standard on predatory pricing is inadequate. In section 3, we motivate our proposed approach, and in section 4 we expose a three-step structured rule of reason, and draw contrast with other proposals. In section 5, using publicly available information about the American Airlines case, we illustrate how in practice our proposed rule of reason could be implemented. The last section concludes.
2 Economic Theory and the AKZO Rules

Most economists endorse the definition of predation as profit sacrifice that leads to excluding or disciplining rivals allowing the predator to exercise increased market power. Yet for two decades the antitrust debate has centered not on making this definition directly operational but on designing simple cost-based rules to detect predation. In the EU, the ECJ held in AKZO that:

- Prices set by a dominant firm below its average variable costs are presumed abusive.
- Prices above average variable costs but below average total costs are abusive if they are intended to eliminate a competitor.
- Prices above average total costs are conclusively legal.

The first problem with the AKZO rules is that they heavily rely on price cost comparisons to establish a presumption of predatory conduct. As it will become clear below, cost-based rules are not on solid analytical ground with respect to the economics of predation. In fact, such rules are ad-hoc, derived from a simple and static micro-economic model of the firm. Economic models of predation are inherently dynamic and emphasize the role of information between the predator and its preys instead of the size of the profit sacrifice.

Second, and contrary to what the proponents of cost-based rules would assert, such rules are not necessarily operational, and do not guarantee a high degree of legal certainty. Assessing the costs and prices of a company requires an extremely detailed and complex investigation of the dominant firm’s cost structure and revenues. This often leads to bitter disputes regarding cost measurement and allocation. In addition, costs are in general derived from accounting books that are loosely connected to economic costs. This provides additional ground for disagreement concerning the proper cost benchmark for comparison.

Third, the concept of intent is too subjective to be operational and should be of no relevance to the assessment of predation. First, even the most vicious intent to exclude a competitor cannot lead to competitive harm, if the conditions for predatory pricing are not met. Second, even conceptually, it is hard to distinguish the intention to win (which is the essence of competition) from the intention to exclude. In the extreme, for example in a winner-takes-all market, the two concepts coincide: in such a scenario, a firm that intends to succeed must intend for its competitors to fail. We can therefore conclude that intent criteria on their own clearly do not help in distinguishing between competition on the merits and predatory pricing: absence of intent does not prove price competition while evidence of intent does not prove predation.

A further problem is that intent evidence can be difficult to obtain in practice. In most cases, proving intent requires a surprise inspection on the defendant’s premises. This is a highly resource intensive exercise and is only carried out if there exists sufficient evidence confirming the predation allegation. However, in most cases such evidence does not exist at the initial stage and, after having received a complaint, a competition agency usually has to do further fact finding to justify carrying out such an inspection. In particular, if this requires cost and price data as in predation cases, the relevant information could only be received from the defendant firm. By sending out a request for information to the defendant firm, however, the latter is informed about the issue at stake, which creates the serious risk that intent evidence with probative value will be disposed of by the defendant. In consequence, the agency may prefer not to invest resources unless it is certain that prices will fall below average variable costs.

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6 The paper by Bolton, Broadley and Riordan (2001) advocating increased use of modern economic theory on predation can be seen as a turning point.
In this section, we will quickly review the economics of predation and discuss the various shortcomings of the AKZO rules.

2.1 A Quick Review of the Economic Theory of Predation

Economists associated with the Chicago tradition were first to cast doubts on predation as a profitable strategy. If predation were generally unprofitable, it would not be observed in reality. Low prices are thus likely to reflect pro-competitive not predatory strategies. McGee (1958, 1980) was the most persuasive proponent of this view. Although his criticism of predatory pricing is extensive, his most forceful argument is the following: predatory prices are only temporary. Recognizing that the predator is incurring a temporary profit sacrifice, the prey understands that eventually the predator will have to raise prices to either reap larger economic profits or simply stop selling at a loss. The prey may just sit out the predatory episode, waiting for the “storm” to end. In addition, even if the prey is short of cash, it can rely on the capital market to resist the “predatory storm”. The predator, anticipating the resistance of the prey, will never engage in predation. The predator has nothing to gain - it can only lose money. The crucial assumption underlying MacGee’s reasoning is that predatory prices are common knowledge. The prey knows that the predator is setting temporary low prices that are not sustainable, and the predator knows that the prey knows this, and so on.

In the early eighties, the Chicago view was challenged by modern economic analysis. Using game-theoretic models, various economists have shown that under circumstances of asymmetric or imperfect information predation may be a rational conduct. Today, the established models of rational predation include three main scenarios all deriving from informational asymmetries regarding demand, the prey’s performance, or the predator’s competitive advantages in one or more markets. These modern theories provide a justification of why the prey will exit (or fail to enter) and how the recognition of such possibility provides the motivation for a rival firm to predate. Three major motivations have been formally articulated. A firm may prey

i) to drive a financially constrained competitor out of the market;

ii) to gain a reputation as an aggressive competitor.

iii) to send a signal with the goal of deterring new entry. The signal may be that either demand is weak or that the incumbent’s costs are low. In either case, the intended message may be that there is no prospect of profitable entry.

A common thread is the presence of incomplete information that can be successfully exploited by the predator. These theories explain why the prey does not sit out the predatory attack in the expectation that the predator will raise prices later - rebutting McGee’s argument. The formal economic proof of predation theories is often complex. A good exposition along with some intuitive discussion can be found in Tirole (Chapter 9, 1988), Rey and Tirole (1997), Bolton et al. (2000) and Motta (Chapter 7, 2004).

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7 Theorists have identified other circumstances in which predation can be rational. For instance, Roth (1993) shows that predation can be an equilibrium strategy in a game in which players are uncertain about the strategies their opponents will be playing (e.g. how long its rival will be willing to continue to fight for market share or how willing its rival is to settle for a particular market share). Cabral and Riordan (1997) show that economies of learning by doing might allow an incumbent to predate successfully even when information is symmetric. Welfare effects in this model are mixed. The predator may become a monopoly but its efficiency increases by moving down its learning curve faster. A monopolist with a lower marginal cost charges a lower price, so it is plausible that consumers might benefit in the end.


2.1.1 Predation to eliminate a financially constrained rival

The idea that an incumbent firm with extensive internal financial resources (i.e. deep-pockets) may successfully prey upon a financially constrained rival has a long tradition in antitrust. Telser (1966) was among the first to offer a formal exposition. He argued that if the prey must incur some fixed cost to remain in operation, then, by driving the market price below variable costs resulting in a loss at least as large as fixed costs the predator may exhausts its rival’s reserves, driving it out of the market. Predation would be both feasible and rational, provided the monopoly rents the predator receives once exit has occurred are sufficient to compensate for the reduction in profits during the predatory episode.

Telser assumed that the prey’s ability to raise debt was limited and that the potential predator knew that limit. However, he offered no formal explanation of why the prey was financially constrained. Although it is admissible to assume that the predator has a larger war chest, it is unclear why the financially constrained firm cannot borrow funds if it faces a predatory episode. The mere availability of such funds would deter the predator from ever attempting to predate and so the actual prey will never have to call upon its line of credit. Thus, Telser does not satisfactorily resolve Chicago School’s proposition that the prospect of long-term profitability would lead the prey to stay in the market.

Modern theories of predation focus on the relationship between the potential prey and its lenders (be they banks, equity holders, or other financial institutions). The predator exploits the fact that lenders do not have complete information to enable them to judge the prey’s performance. In this situation, the incumbent may predate to reduce the prey’s profits. Investors observe the decline, but cannot tell whether it is caused by predation or inefficient performance. For example, the prey may have invested in overly risky projects or the managers may have appropriated the funds for its private benefit.

The lender to the prey faces a dilemma. A continuing supply of funds sufficient to deter predation invites opportunistic conduct by the prey. On the other hand, if the lender attempts to impose financial discipline on the firm with repayment obligations and collateral requirements, it may invite predation by rivals. It can be formally shown (see Bolton and Scharfstein, 1990) that there is no fully satisfactory solution to this dilemma. Indeed, the lending contract that minimizes agency problems will maximize the incentive to prey. Under these circumstances, lending to the prey becomes more risky, and banks or other investors may reduce or withdraw their financial support. Ultimately, the lender can protect its interests by demanding the prey to put up a significant fraction of its own capital (such as retained earnings) as collateral. In that case, only firms with access to significant internal resources may be able to raise external finance to fend off a predatory attack.

2.1.2 Predation to acquire a reputation for aggressiveness

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8 Modern theories of financial predation rest on theoretical developments laid down by economists in the 80s on the optimality of debt contracts – see in particular Gale and Hellwig (1985). Asymmetric information between the creditor and the borrower yields a debt contract as the optimal contract. That is, the creditor is the residual claimant in case the borrower is unable to meet its obligations but can only claim a fixed amount (the principal and interest payments) in case no bankruptcy occurs.

9 Consumers are unlikely to provide a source of support to the prey. Although it is in their interest to maintain competition in the long run, individually customers have a private interest in buying from the predator at a lower price. As a result, customers are trapped in a prisoners’ dilemma.
An incumbent may engage in predatory pricing in one market because it can benefit in other markets through creating a reputation for toughness\textsuperscript{10}. Such a reputation will allow the predator to enjoy monopoly profits in other markets without the cost of fighting a price war in each one of them.

By definition, the reputation effects of predatory behavior may arise if the predator operates in multiple, closely related markets. For instance, in airline markets, because each city pair defines a separate market a predatory campaign on a single route or a few routes may be sufficient to deter entry on many other routes\textsuperscript{11}.

To be effective a reputation for predatory conduct relies on the potential entrants being able to identify the incumbent’s strategy as predatory. This means that rivals that are present or intend to enter many of the same markets where the predator is active are more likely to regard the incumbent’s predatory behavior as credible\textsuperscript{12}. The need to have potential entrants observe an aggressive response seems risky if predation is illegal – but it does not imply that Courts or a competition authority can always determine that predation has been practiced.

2.1.3 Predate to mislead rivals in believing the market is unprofitable

Most firms contemplating entry or exit from an industry do not have all the relevant information to determine future revenues and costs. To the extent that an incumbent firm is better informed about cost or other market conditions, or can manipulate and distort market signals about profitability, it may be able to influence the expectations of its rivals through its pricing decisions or other actions. Predation, in this context may be rational because a firm’s decision to enter or to leave a market is necessarily based on its evaluation of expected future costs relative to incumbents and demand conditions. The prey can be deceived in three ways:

1. Predation to deceive the prey in believing the predator has low costs\textsuperscript{13}. Suppose a potential entrant does not know whether the incumbent has low or high costs. The entrant may infer this information by observing the incumbent’s pre-entry pricing. However, a high cost incumbent could mimic the pricing behavior of a low cost, in an attempt to discourage the entrant. This strategy will not always succeed since a low cost incumbent would not like to be mistaken for a high-cost, since this would attract entry and lower its profits. There are two possible outcomes:

   A. The efficient incumbent will set a price lower than its normal monopoly price in the first period (when it is the only active firm) that is so low that no weak incumbent would like to set it because it would involve excessive losses. Since there is no scope for mimicking the efficient incumbent, the inefficient one will choose its normal monopoly price. The entrant will immediately learn which incumbent it faces: if the price is low, it can only be the

\textsuperscript{10} Fundeberg and Tirole (1985) and Easley, Mason and Reynolds (1985) show, respectively, that low prices can convince rivals that fundamental market conditions are inherently bad, inducing their exit or preventing further entry. Saloner (1985) also presented a model where predation is aimed at "softening up" a rival in order to improve the terms of take-over.

\textsuperscript{11} Yamey (1972), Posner (1976), and Scherer (1990) have noted that predation in one market may lead to entry-deterring demonstration effects in this and other markets in which the predator operates. Depending on the magnitude of such effects, predation could be a present-value-maximizing strategy. Formal models of reputation creation through predation have been advanced by Kreps and Wilson (1982a) and Milgrom and Roberts (1982b).

\textsuperscript{12} Note that in models of cost signaling or test-market predation the prey suspects is being subject to predation but precisely because it is not certain, it prefers to exit. Thus these motives to predate are inconsistent with the "reputation" motive.

\textsuperscript{13} For a formal model, see Milgrom and Roberts (1982a).
efficient one, and it will stay out. If it is high, it will face the inefficient incumbent, and will enter\textsuperscript{14}.

B. Suppose there is no price, at which the low-cost incumbent can profitably sell and be distinguished from the high-cost one. As a result, it will simply set its normal monopoly price and the low cost incumbent will imitate it in order to deter entry. In this case, the inefficient incumbent predates in the sense of the definition in section 0. The high-cost incumbent sets a lower price than it would otherwise set in the first period but it induces the entrant to stay out, as it cannot, based on the observed pre-entry prices, determine whether the incumbent is high or low cost\textsuperscript{15}.

Note that in the second case, where predation is rational, the pre-entry price might be above or below the incumbent’s costs. What really matters is that the prices are below those of the prey. Indeed predation here is not inherently associated with the incumbent setting a low price\textsuperscript{16}.

2. Test-market predation and signal jamming\textsuperscript{17}: Consider a potential entrant that seeks to introduce a new product or brand to compete with an existing product. Assume it lacks knowledge and experience in the market and ignores whether demand is high or low. If demand for the entrant’s new product is high, entry is feasible. However, if demand is low, entry is not profitable since entry at full efficient scale is expensive. Without additional information on demand conditions, the expected profitability of entry may be negative and the entrant would stay out because possible losses are too high to justify the entry gamble.

However, the entrant may be able to test the market by introducing its new product on a limited basis, e.g. in a small geographical region. In this way, the entrant can gain sufficient information about future sales to determine whether entry will be profitable. The potential gain from successful entry fully justifies the cost of the market test. The established firm (the predator) may frustrate the market test in two ways:

\§ By \textit{s tartly} cutting price in the test-market to reduce the entrant’s sales and thereby induce it to believe that demand is too low to justify market entry or to enter on large scale. This strategy is known in the economics literature as \textit{test-market predation}.

\§ By \textit{signal jamming} that is, \textit{pub licly} cutting its price, thus distorting the data the entrant receives from its test market experiment. The entrant may know that its demand is artificially low due to

\textsuperscript{14} Interestingly one could say that there is predation, in that the ‘low’ cost incumbent is acting “strategically” and sacrifices current profits to deter entry and ensure it remains a monopolist in the future. However, the incumbent’s actions do not reduce welfare: To see why, note that in a perfect information world the entrant facing the low-cost incumbent would never enter (by assumption), and consumers would have to pay the normal monopoly prices in both periods. Instead, the low-cost incumbent charges a much lower price than it would otherwise do to signal its efficiency. Therefore, while in the second period the sales price is the same, consumers will be better off in the first period.

\textsuperscript{15} Cost signaling predation may not only deter entry but also drive existing rivals. For example consider an industry that has only two firms. Both firms have the same costs initially, but one firm (Firm 1) may be able to reduce its production costs through an important technical innovation, management change, exclusive access to a cheap input, or similar means. Whether this happens or not Firm 1 may reduce its prices to signal that, it has achieved a cost breakthrough. A strategic analysis of cost signaling shows that under a range of plausible conditions, the victim will leave the market even though it strongly suspects the predator is bluffing.

\textsuperscript{16} For a striking example, consider a situation where the entrant - new to the industry- does not really know what costs it will have itself, and expects them to be identical (or highly correlated) to those of the incumbent. In most cases where two firms with identical costs compete, each firm’s duopoly profits decrease with costs. Thus, the incumbent might deter entry by setting a high price, because this would signal the existence of high costs in the industry for both - see Harrington (1986).

\textsuperscript{17} See Scharfstein (1984) or Fudenberg and Tirole (1986)
the incumbent's low prices, but it cannot have any information about what demand would be in normal competitive circumstances. In the absence of the necessary information regarding demand, by assumption, the entry gamble will not pay so no entry is attempted.

3. Predation to drive the prey in believing demand is weak. A better-informed predator may reduce prices to convince the prey that market conditions are unfavorable and that aggregate demand is too low to justify the continued presence of both firms in the market or a major expansion drive by the prey. The prey, falsely inferring a weak level of demand from the predator's low price, may exit.

However, this form of predation is less plausible in practice and hence we do not discuss it further. It is unlikely that one firm can have superior information about aggregate demand. Alternatively, a less informed incumbent may be able to retrieve this information from its own experience and accurately interpret market trends.

2.2 Cost-Based Rules Have Little in Common with Predation

Areeda and Turner (1975) were the first to propose the use of price-cost comparisons to identify predation – specifically predatory pricing. They conjectured that if a firm sets its price below some pre-defined cost benchmark it must be predating because there is no other rational explanation. Conversely, if prices remain above costs only less efficient competitors are excluded. This argument had much appeal at a time when economists where unable to prove rational predation and courts were increasingly concerned about the chilling effects on competition of anti-predation policies. Areeda and Turner offered a defense against the abuse of antitrust laws by firms unable or unwilling to compete on the merits against a more efficient and innovative incumbent.

Alas, Areeda and Turner's simple idea is flawed. First, there are multiple reasons why a firm might temporary price below costs, even marginal costs. Below cost pricing is thus a poor test to identify predatory from pro-competitive motives. Second Areeda and Turner implicitly assume firms sell identical products and use the same technology – only some firms less efficiently than others do. Surely, in such simple scenario, if a firm prices above its own cost this will could drive only less efficient firms out of the market. In reality, however, the concept of relative efficiency is often meaningless in that it compares apples and oranges. Firms rarely offer identical product or services. They compete along multiple dimensions, not just price. Further, the may use different technologies one being more efficient than the other depending on the level of output. What matters in all such cases is whether one firm constrains the pricing decisions of the other.

More importantly, Areeda and Turner offer no theory of rational predation. As Scherer (1976) pointed out early on, cost-based rules are ad-hoc, based on static view of monopoly and non-strategic competition. He warned, “Courts that attempt to substitute simple cost rules for such analyses of effect and intent in alleged predation cases are likely to reach economically unsound decisions”. Indeed, in modern economic theory, predatory pricing bears little connection with marginal cost. Ordover and Saloner (1987) emphasize that:

"… [I]n fully specified models of reputational and signaling predation … successful predation does not necessarily require prices below MC (i.e., marginal cost) or AVC. It requires, however, prices that convey to the rival the signal that it should not enter or remain in the market. Such prices bear no systematic relation to the incumbent's AVC."

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18 See Roberts (1986)

19 Even the elimination of a less efficient firm, when comparisons are possible, may reduce welfare and benefit consumers if the loses in allocative efficiency from monopolistic pricing more than offset the gains derived the more efficient firm expanding output at the expense of the less efficient one.
In models of rational predation “below cost pricing” does not emerge as a sufficient condition. Essentially, for the reason McGee pointed out: if prices were later expected to increase, rivals would not be deterred or driven out of the market by prices below average costs. Other elements need to be present for predatory conduct to pay-off.

For example, common to all models of financial predation is the assumption that the predator has unconstrained (or cheaper) access to financial resources (e.g. due to size, internal source of revenues, efficient monitoring by external creditors or a better credit rating) and can sustain financial losses for a longer period. In contrast, the prey is financially constrained and informational asymmetries, endemic to capital markets, exist between the firm and its lenders or investors. Absent these conditions, predation would fail. Temporary below cost pricing is more likely driven by pro-competitive not predatory motives, turning Areeda and Turner’s assumption on its head.20

Similarly, below cost pricing is not sufficient when an incumbent predates to acquire a reputation for aggressive behavior. The predator may price below cost in one market permanently if this deters entry into other markets where it can then exercise market power.21

More strikingly perhaps, “below cost pricing” is quite generally, not even a necessary condition (let alone sufficient) in signaling models. For instance, in the model proposed by Milgrom and Roberts (1982a) where a high-cost incumbent lowers its prices to mislead a potential entrant into believing it has low costs and entry would be unprofitable. The incumbent prices low to deter entry but prices need not fall below its own cost. All that matters is that the entrant reduces its expectations about future profitability.

2.3 What Defense for the Legal Price-Cost Comparison?

What is the rationale for the continued use of price-cost tests? Proponents of such an approach offer three arguments:

(i) Pricing below average variable cost must be predatory, because it is unprofitable unless it is part of a strategy leading to higher prices later.

(ii) Rules against below cost pricing protect only as efficient or more efficient rivals. Efficient incumbents must be allowed to take advantage of their superior efficiency to set their prices at whatever level they deem appropriate. As long as the price remains above cost, it is perfectly legitimate for a firm to temporarily, set prices below its short-run profit maximising level. A safe harbor for above-cost pricing reduces the risk of chilling legitimate, hard-nosed competition.

(iii) Most price-cost tests focus on the relationship of price to the predator’s cost, not to the prey’s cost. This has the alleged advantage of ensuring legal certainty. Presumably, a firm knows its own costs and hence can avoid a predation claim by maintaining prices above costs.

We rebut each of these arguments in turn.

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20 This suggests below cost pricing is not a sufficient condition in financial predation models. It is not a necessary condition either: This is because the cost of capital to the prey is endogenously increased by the threat of predation. By lowering its prices, the predator increases the (capital) costs of the prey. The point at which it is unprofitable for the prey to enter or remain in the market may be reached before the predators’ prices fall below its costs.

21 Arguably below cost pricing is also not sufficient when predation is driven by reputational considerations. An incumbent can price exactly at average total cost in one market reducing all prospect of profits, even for itself. If potential entrants in other markets in which the predator is present are led to believe that it will always respond to entry by pricing at average total cost, they may prefer to stay out rather than assume the risks associated with entry.
2.3.1 There are many Pro-Competitive Justifications for Below-Cost Pricing

A firm may price below its cost not only to predate but also to promote a new product or enter a new market, reduce costs through learning-by-doing, or increase the value of its product through network externalities. Such pricing is essentially dynamic in that the price cutter anticipates that lower costs or increased marketing efficiency in the future will compensate for present losses. Bolton et al. (2000) discuss extensively why a firm may legitimately lower prices in the context of (i) promotional pricing, (ii) learning by doing and (iii) network externalities22 - see also section 4.4.

This list is no by no means exhaustive. There are also instances where a too-literal reading of the price-cost test would misconstrue legitimate pricing strategies as predatory. In the presence of two-sided markets a shortsighted analysis based on one side of the market would easily characterized a low price as predatory. A well-known example of two-sided market is the business model of the Adobe Acrobat Reader and Writer. While the Acrobat Reader is offered for free over the internet, arguably below some measure of cost, Acrobat Writer is sold for a fee. The rational behind this pricing strategy stems from the fact that the incentive to purchase and create files with Acrobat Writer is greater when there is a large number of users that have Acrobat Reader installed.

Yield management pricing may also lead to apparent below-cost pricing. For example, the adoption of yield management in the airline industry has led to the offering of extremely low fares, in particular by low-cost carriers. Ryanair has been a champion of highly discounted fares such as 1 Euro one-way ticket on some routes. Although the fare is available to only few passengers, the 1 Euro fare would appear clearly to be below any measure of cost of transporting one passenger.

There may be other reasonable examples of below-cost pricing generating efficiencies. In general, these practices tend to expand demand, but so does predatory pricing. In this context, how does one discriminate between predation and legitimate market-expanding strategies when observing below-cost pricing? A price-cost comparison alone cannot. Only a thorough analysis of the alleged predator's conduct enables the investigator to discriminate between harmful predation and an efficiency-enhancing practice.

2.3.2 Successful Predation on less Efficient Rivals can Reduce Consumer Welfare

A common statement among anti-trust practitioners is that conduct can only be anti-competitive to the extent that it excludes equally efficient competitors. Not only this argument fails to rebut McGee’s main criticism, but also less efficient firms play a useful role in constraining the prices that firms that are more efficient can charge. There are at least three compelling arguments in favor of penalizing above-cost predatory pricing under certain, even if uncommon circumstances.

First, the dogmatic view that only below-cost pricing can injure "as efficient" producers is not entirely correct because it fails to account for dynamic efficiency.

Smaller rivals or potential entrants may have access to the same technology as incumbents yet face much higher average costs. Because production is subject to increasing returns to scale, as more output is produced, average costs fall. In that case, the incumbent may price above its average total cost but below its rival’s average cost. The rival might take a long time to increase its demand to levels that would yield costs as low as the incumbent monopoly. For this reason, the monopoly might be able to engage successfully in predation with above-cost pricing. Here

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22 For a detailed explanation of how to account for these market-expanding strategies, see Bolton et al. (2000) pp.2276-2282.
the possibility of above-cost predation can be seen as arising from cost asymmetries not from an absolute cost advantage of the incumbent.

Second, relative efficiency is a multi-dimensional concept and cannot be based solely on costs differences.

Price-cost tests implicitly assume that firms are identical except with respect to average costs, which determines their relative efficiency. However, this assumption is untenable. Firms may have similar costs and prices yet differ in the quality of their products or services, location, or conditions of supply. The products they offer may be differentiated (branded), targeting slightly different customer segments within the same relevant market. Some firms may offer a single product others may be multi-product companies and may sell (produce) several goods in combination. Firms may also differ in the ability or incentive to invest in future product development.

The argument that price-cost tests protect as efficient rivals is thus misguided. Costs are just one dimension of efficiency. For instance, a predator may over-invest in quality, innovation or any other important dimension of competition such as frequency of service. Prices may be higher than own costs, maybe even higher than rivals’ costs. However, the quality-adjusted (or innovation-adjusted) price may still be the lowest and could thus be predatory under appropriate conditions.

Third, the presence in the market of a competitor, which is less efficient than the incumbent, may be beneficial in terms of consumer welfare.

In every market, some firm is more efficient than others are. Workable competition is still valuable in such markets. Indeed, even when one firm is so much more efficient that it can be said to be dominant, the existence of less efficient firms may significantly constrain the pricing of the most efficient firm. Prices may be above levels that would result if equally efficient competitors existed but may be far below the monopoly price.

Furthermore, if firms anticipate being driven from the market shortly after entry, they will typically not enter at all. Consider the airline industry. On many routes, an incumbent airline dominates business on that route and sells at a price well above its costs for that route. Periodically, another airline enters the market at a lower price. The incumbent firm then lowers its price to beat (match) the entrant. The incumbent never prices below its own costs. However, because the entrant has higher costs (lower quality), it cannot compete at the new price and is driven out of the market. Moreover, it can never reach sufficient scale to minimize costs. Once the less efficient entrant is safely gone, the incumbent reestablishes the old price.

In our view, a competition authority should prevent predatory conduct that excludes rivals whose presence enhances consumer welfare, even if such rivals are otherwise identical but have higher costs than the predator.

Implicitly, the Commission and the Courts have taken exactly this position in some cases. In 1996, the European Court of First Instance in 

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sustained a European Commission ruling that it constituted an abuse of a dominant position to adopt a “fighting ships” strategy of responding to entry by making selective price cuts. The firms were members of a shipping conference which engaged...

Limit pricing poses a particular challenge in these circumstances. Limit prices, at a level that is above cost but below monopoly prices are generally desirable. However, a strategy of limit pricing may be indistinguishable from one of above-cost predation. In particular, it is difficult to establish whether the alleged predator has sacrificed any profits by pricing below monopoly levels. It can always claim that it was engaging in (desirable) limit pricing. The only way to discriminate between limit pricing and predation is that limit prices are sustained over time (because the threat of entry is permanent) whereas above cost predation leads to lower prices only as long as necessary to avert a temporary entry threat.
in a predatory pricing conduct by selectively offering low prices on routes were non-members of the shipping conference were active. Whenever a sailing was announced by non-members, conference members would deploy their ships on that route. As the prices charged were not below their total costs, Compagnie Maritime Belge argued that these prices could not be deemed predatory under the criteria lied down in AKZO.

The ECJ, however, confirmed the Commission's decision and held that under Article 82 it was abusive for a dominant defendant to adopt a strategy of selectively reacting to entry by cutting prices, regardless of whether the prices remained above cost. The ECJ did not categorize such strategy explicitly as predation but commentators agree it met the standard definition: there was actual sacrifice, rivals were excluded and the conference cartel managed to increase prices afterwards.

2.3.3 The Difficulties in Measuring Cost and Prices Create Legal Uncertainty

As mentioned above the underlying assumption in most price-cost tests is that firms produce the same good and compete in prices. Implicitly, it is also assumed that in normal situations prices equal marginal costs. Both these assumptions are disputable, particularly in the case of very concentrated industries (which are precisely the ones where predation claims arise). The equality of prices and marginal costs also raises theoretical problems. It implies, for example that a duopoly is not viable if firms' technologies are characterized by a fixed cost and a constant marginal cost.

Defendants of price-cost tests often argue they are operational and at the same time provide legal certainty. No one who has been involved in a predation case, on any side, would hesitate to question such claim. Cost-based tests for predation have proven to be difficult to implement even in the most stable and simply structured of manufacturing industries. There are substantial disputes over how to calculate and allocate costs. Unresolved issues include how to treat costs in industries with near-zero marginal costs, how to apply cost tests in situations in which equally efficient firms have different ratios of fixed to variable costs, what to do when, in declining industries, all firms have marginal costs that are below their variable costs.

Multi-product companies also raise serious difficulties. First, the allocation of costs related to advertising and promotion causes problems when expenses cover different markets. Similar cost allocation (and pricing) difficulties arise when there exist economies of scope combined with network effects. For example, today's world of scheduled air carriers, working out of a hub-and-spoke network, is fundamentally different from the world in which economists in the 70s debated about cost-based tests of predation. In this world, the very concept of "a" cost for a particular spoke is a chimera. In an industry characterized by multiple products (different routes, categories or frequencies), extremely low marginal prices, and joint network costs, the cost of a particular seat on a particular route is impossible to calculate.

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24 We acknowledge one potential difficulty in cases of above-cost predation. In many competitive markets, incumbent firms maximize their ability to incur common costs (and thus create output) by charging high-demand buyers higher prices to get them to cover a disproportionate share of recurring common costs, and charging low-demand customers lower prices that are closer to firms' marginal costs once these common costs are incurred. Competition or low entry barriers will ensure that overall revenue from this output-maximizing price-discrimination schedule does not exceed economic costs. This probably describes airlines, which do not earn positive economic profits but do charge more for a ticket that offers one nonstop flight than for the same flight when bundled with a connecting flight. An entrant who cherry-picks by selling only to the high-value customers at a lower price could undercut an output-maximizing price schedule. In order to continue to cover common costs, incumbents will have to react to such entry by lowering their prices to those high-value customers. This reactive above-cost price cut will drive a less efficient entrant out of the market. However, this does not mean that the price cut protected incumbent market power and harmed efficiency and consumer welfare. To the contrary, it means that the initial discriminatory pricing schedule never indicated market power, and that allowing the normal competitive process of price cuts to drive out the entrant restores the market to an efficient and output-maximizing state. Though we recognize this difficulty, we believe, if pertinent, it is best left to the dominant firm to offer this justification in its defense.
Finally, appropriately defined economic costs will often be different from costs in the firm's books, which are collated according to accounting principles (rather than economic principles). None of these difficulties in identifying, measuring and allocating costs (and prices) makes it particularly easy or swift to apply price-costs tests. The ensuing delays and controversy do not result in legal certainty either.

2.4 Conclusion

Price-cost tests are flawed in several ways. The determination of the proper cost measure raises many complex issues. This, in turn, opens the door for legal disputes that generates uncertainty about the implementation of the current legal standard.

In addition, legal rules based on price-costs tests are formalistic and make no attempt to distinguish between hard-nosed competition that likely benefits consumers and true predation. It is presumed that prices temporarily below the predator's costs would (i) automatically exclude rivals, including some more efficient ones and (ii) the predator will be able to exercise increase market power and thus recoup its initial profit sacrifice, for example by raising prices beyond pre-predation levels. However, recognizing that the predatory strategy is temporary, why would a more efficient firm exit the market? And why would this firm or a successor not reenter when the predator increases prices? – for example making use of the prey' original assets.

The AKZO rules, and more generally a rule based on a single price-cost comparison, can lead to both over-enforcement (false positives) and under-enforcement (false negatives):

β Over-enforcement results because below cost pricing is a poor proxy for predatory conduct. There exist many pro-competitive reasons to price below-cost. Over-enforcement encourages as efficient and less efficient rivals alike to make bogus complaints to a competition agency to fend-off aggressive competition by a dominant incumbent. It also promotes more collusive behavior in the market.

β Under-enforcement may result for two reasons. First, difficulties in measuring, allocating and comparing costs (and prices) can frustrate even the most committed and resourceful agency leading to considerable enforcement delays and legal uncertainty. Second, above cost pricing can be predatory, potentially deterring (i) more efficient entrants, who have not yet reached sufficient scale or (ii) less efficient rivals, which partly exercise a competitive constraint on the predating firm. Under-enforcement may cause large companies to try to establish a reputation for toughness in order to deter entry into their markets.

In conclusion, the existence of predatory pricing should not be determined by reference to some precise formula or definition based on price-cost comparisons. No single rule or procedure, however complex, can encompass the variety of situations identified by Industrial Organization theory as potentially conducive to predatory behavior.
3 A Rule of Reason under Article 82

The economics of predation stand on strong game theoretic foundations. Under certain conditions, (most of which are empirically observable) predatory behavior by an incumbent firm is a rational, profit-seeking course of action, which can foreclose or discipline competition leading to consumer harm. Equipped with the economist tool-kit, the use of a rule of reason is therefore superior to any per se rule. Detecting predation requires a thorough economic analysis of the industry, including the information structure in the market and the relevant asymmetries between the predator and its potential victims. Economic theory helps organize and structure the information gathered into a consistent framework of analysis.

3.1 Why a Three-Step Rule of Reason?

Predation occurs only when a particular action entails a sacrifice relative to some more profitable alternative but for the elimination or disciplining of rivals and the subsequent increase in market power. Fundamental to the understanding of predatory conduct is that it is costly: in order to reduce the profitability of a rival, a predator must itself initially sacrifice profits. For a firm rationally to engage in predation, such behavior must significantly reduce competition over the longer term or in other markets such that the initial sacrifice can be recouped through the exercise of increased market power.

Three elements (or conditions) should be stressed from this mechanism:

(i) the sacrifice of profits (sacrifice)
(ii) the negative impact on rival profitability which may induce a prey to exit, reduce its scale or stay out of the ‘sacrifice’ market or closely related markets (likely exclusion)
(iii) the ability to recoup the initial profit sacrifice by exercising increased market power after the sacrifice phase (likely recoupment)

Thus, to distinguish predation from aggressive competition evidence of actual sacrifice must be complemented with evidence of likely exclusion and likely recoupment. These are necessary conditions for the conduct in question to be predatory, and neither by itself is sufficient for condemnation. However, taken together they are sufficient to establish a presumption of predatory conduct.25

In some cases, there is evidence of exclusion and ex-post prices increase, indicating likely recoupment. However, the Commission should try to step-in as early as possible, at the “sacrifice” stage. Inevitably, the assessment in this case must be forward looking. In this respect, one must articulate all three elements in the context of an empirically plausible theory of harm. As regards exclusion and recoupment a “more likely than not” standard appears most reasonable.

Recall the Chicago School objection to the rationality of predation, namely that predation cannot succeed because the prey, anticipating the need for the predator to recoup its initial sacrifice, will prefer

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25 This approach is similar to that taken by the US Supreme Court in its 1993 decision on the Brooke case. The Court required proof of three elements: (1) sufficient market power to have the requisite anticompetitive effect in the market where the predatory pricing is occurring, and (2) a sufficient likelihood of recouping the investment in below-cost prices after rivals were eliminated or disciplined and (3) proof that the defendant priced below some measure of costs. The Supreme Court did not resolve which measure of costs is relevant. The basic difference with our approach is that we allow for a finding of profit sacrifice, which does not rely, strictly speaking, on price-cost comparisons. This reduces the emphasis on estimating costs, which is complex and notoriously controversial, placing more weight of indirect evidence of profit sacrifice. Furthermore, it allows for a more comprehensive treatment of all predatory practices in general, including non-price predation.
to stay in the market. Moreover there may be significant barriers to exit, such as sunk investments which
enhance the incentive to stay. If lower prices do not lead to exclusion, no rational firm would predate,
predation would not be observed, and aggressive conduct can be safely assumed pro-competitive. It
follows that “likely exclusion” can be proven in reference to some valid theory of rational predation.
The different theories of harm presented in the previous section show how a prey may be induced to
exit under certain economic circumstances. For example, in the case of financial predation lower prices
may have exclusionary effects if lenders cannot distinguish whether reduced revenues are due to
predation or mismanagement by the prey.

Evidence of likely exclusion is not in itself sufficient to ensure that predation is rational. It must also be
shown that recoupment is likely. This depends on whether the prey was an important competitive
constraint on the predator and on the post-exclusion competitive environment. For example, if the
prey’s product was a close substitute to that of the predator, and repositioning by other rivals is costly,
then the predator would likely recoup even a substantial initial sacrifice. Thus it is at least plausible that a
firm would predate in this case.

The recoupment condition serves as a proxy to test whether predation is likely to reduce consumer
welfare. This point is clarified by considering that the recoupment of predatory losses necessarily
involves harm to consumers. Predatory losses can be recovered only by setting and sustaining a price
higher than the price that would have been charged if the predatory attack had not eliminated or
deterring competition. It is the increase in price post-exclusion above pre-predation levels that harms
consumers. Thus, if the recoupment test indicates that there is little or no likelihood of recoupment,
then predatory pricing would be neither rational nor anti-competitive. Indeed, in that case a predatory
pricing campaign should actually boost consumer welfare for as long as the predatory attack lasts, with
little or no danger of harm to consumers in the longer run.

It is not enough, of course, to show that predation is plausible and likely to be anti-competitive given
certain market conditions. Evidence that the defendant has in fact attempted to predate by sacrificing
profits is also necessary. Price-cost tests are undoubtedly a direct way to assess sacrifice. However we
advocate a more flexible approach to showing profit sacrifice. First in most cases it may be possible to
make some reasonable estimate whether the incremental revenues of the alleged predatory practice are
below its incremental costs. Alternatively sacrifice can be shown if it there exists an alternative more
profitable course of action in the absence of exclusion.

Nevertheless, we stress that evidence of price below cost, even below average variable cost, should not
be a necessary requirement to identify sacrifice in all cases. As explained in the previous section below-
cost pricing is not systematically related to predation. This is true particularly when the predatory tool is
non-price related, such as brand proliferation in a multi-product setting, temporary quality or attribute
enhancements, capacity expansions or increased service frequency. It follows that, when available,
evidence on below-cost pricing is sufficient as a proof of sacrifice, but not of predation, which also
requires a showing of likely exclusion and likely recoupment.

In implementing the proposed structured rule of reason in practice, we suggest to assess sacrifice last,
except in cases where it is obvious the observed practice was highly profitable in all circumstances.
Furthermore we endorse a sliding scale approach whereby strong evidence of likely exclusion and
recoupment can compensate for lack of conclusive evidence regarding profit sacrifice. Finally we point
out that most elements useful in assessing exclusion and recoupment are readily observable.

(i) Assess sacrifice last:

Depending on the nature of the industry, identifying profit sacrifice may be more time-intensive and
complex than the assessment of either likely exclusion or likely recoupment. It may not be
straightforward to determine the incremental cost associated with the predatory conduct. Normally, the
firm whose conduct is being investigated will face a large number of different cost items. In practice, it
may be very time-consuming to determine what extra costs are incurred by the predator. In the case of multi-product firm, the issue of allocating cost often persists in practice, even though in theory the use of incremental cost should alleviate the problem. Further, in certain industries including airlines, firms set a complex array of prices instead of a single price. Carrying out the profit sacrifice step requires an in-depth inquiry of the predator’s costs and revenues.

In contrast, it may turn out easier to determine whether market structure, demand characteristics, conditions of entry and exit are conducive to successful predation based on one or more relevant economic models of predation as a rational profit-maximizing strategy. If exclusion were unlikely, because the potential prey has no disadvantage relative to the predator and exit costs are significant, then predation would not succeed. If recoupment is implausible, e.g. because re-entry is costless, that casts doubt on any theory of rational predatory sacrifice. In other words, the feasibility and rationality of predation in the relevant market should be examined prior to testing for the presence of profit sacrifice26. At the same time complainants must bring a convincing story as to why they will be obliged to exit, rather than a claim that prices are “below-cost”. Such claims are easy to make but difficult for a competition agency to prove (or disprove).

This approach should reduce false positives and save on scarce enforcement resources. If predation is unlikely to eliminate or deter rivals, or the predator cannot recoup its initial sacrifice, then a competition agency can dismiss allegations of predatory conduct without having to carry out an intricate assessment of actual sacrifice.

(ii) Sliding scale:

The evidentiary standard for actual profit sacrifice should be less demanding when proof of the predatory scheme rests on a coherent theory of rational predation supported by actual evidence of exclusion and market structure conducive to recoupment post-exclusion. This amounts to a sliding-scale approach to proof of sacrifice.

Suppose, for example, the Commission articulates a coherent theory of strategic predatory pricing based on modern economic analysis, that the prey has been excluded from one or more markets and that the evidence shows that post-exclusion market structure and competitive conditions allow for a tidy recoupment. With this evidence at hand, it should not be necessary to determine exactly whether incremental revenues are below incremental costs, or by how much and for how long. Instead, evidence that absent exclusionary effects the defendant would have been able to make more profits by following some other plausible course of action (e.g. pricing somewhat higher) would be sufficient in this case to raise objections of predatory behavior27.

However, when the predatory theory put forward appears weaker, though still plausible (i.e. both exclusion and recoupment are more likely than not) more detail is required in the proof of actual sacrifice. That is, in practice, it will be imperative to show that incremental revenues do not cover incremental costs.

(iii) Unobservable elements

An often heard complain is that predation theories depend on factual assumptions that are not

26 Unprofitable predation could well be harmful, but it may not be likely.

27 The sliding-scale approach is an important element in our framework for evaluating claims of predation. Precedent exists in the reverse sense: in predatory pricing cases, the quantum of intent evidence required to prove a violation increases as price rises above average variable cost (AVC) and approaches average total cost (ATC), and decreases as price approaches the lower cost level.
observable. In general, the opposite is the case. For example, in financial market predation, the extent of the prey's dependence on external financing and the resulting dependence of such financing on the prey's initial performance can be objectively determined with reference to financial accounts.

Note also that financial market predation requires no assumption of superior information by predator. The only necessary assumption is that lending markets cannot feasibly make loans contingent on distinguishing whether the debtor's losses stem from predation or from agency costs. Neither does test market predation require an information asymmetry. It suffices simply to "jam" market signals so that the prey is unable to estimate demand and becomes less willing to risk entry.

Reputation building and cost-signaling theories of predation are based on the existence of some informational asymmetries between the prey and the predator. Reputation effects requires that the prey knows less than the predator about the predator's strategy, and cost-signaling requires a similar asymmetry in the prey's knowledge of the predator's costs. Such asymmetries may be difficult to prove directly. However a competition agency can rely on circumstantial evidence and inferences derived past conduct.

In sum, the three steps of our proposed rule of reason will be established in the following order:

- Evidence of likely exclusion that relies on a valid theory of rational predation
- Evidence of likely recoupment that is based on an assessment of barriers to entry and re-entry post-exclusion as well as the deterrent effect of predation
- Evidence of profit sacrifice that requires showing that the incremental revenues brought about by the predatory actions are less than their incremental costs. Alternatively when the evidence regarding likely exclusion and recoupment is strong it may only be necessary to show that there exists in the absence of exclusion some alternative more profitable strategy (not necessarily the most profitable).

In the next sections, we provide more detailed guidance on how to implement this three-step structured rule of reason.

3.2 Other Structured Rules of Reason

Many economists have suggested that predatory pricing or more generally predation should be assessed using a rule of reason. When Scherer (1976) first criticized Areeda and Turner (1975), although he did not formulate how operational his approach would be, he clearly expressed a preference for an effect-based approach. Many economists followed suit.

To date, Joskow and Klevorick (1979) were the first to advocate a rule of reason designed as a two-tier system. The first tier consists in an assessment of whether market structure is conducive to predation. This entails evaluating the existence of monopoly power and the condition of entry. In the second tier the alleged predator's actual pricing behavior is examined. However, the center piece of the second tier is the use of price-cost tests which remains formalistic. Joskow and Klevorick also depart from Areeda and Turner by advocating the average total cost as the primary cost standard for predation.

As far as we know, Bolton et al. (2000) were the first to propose a structured rule of reason incorporating modern economic theories of predation. Their proposal attempts to incorporate these modern theories into the U.S. legal standard, in particular it is designed to remain consistent with the U.S. Supreme Court legal standard developed in Brooke Group. Their proposal consists in assessing predatory pricing by requiring the showing of five elements:

- A facilitating market structure
- A scheme of predation and supporting evidence
- Probably recoupment
- Price below-cost
- Absence of an efficiencies or business justification defense.

In Europe, the AKZO standard as already discussed does not include modern economics into the assessment of predatory pricing. However, a recent decision by the Irish Competition Authority is evidence that a rule of reason including economic theories of predation can be legally incorporated within the framework of article 82. In its decision Drogheda Independent, the Competition Authority proposed the following structured rule of reason. Once the alleged predator’s dominance has been established, the authority determines:

- whether the alleged predatory behavior is plausible,
- whether there could be a plausible business justification for the alleged predatory activities,
- whether recoupment was feasible,
- and finally whether prices were set below cost.

Even though the Competition Authority concluded that the alleged predator was not dominant, based on a rule of reason approach, it also determined that the alleged predation “would appear to be highly implausible”.

Our own proposal bears strong similarities with that of Bolton et al. (2000) and that of the Irish Competition Authority. However, we diverge from these proposals on several aspects. First and foremost, we do not endorse the traditional price cost comparison to demonstrate profit sacrifice. In fact, these comparisons tend to generate very conservative estimates of actual profit sacrifice. As a result, these other rules of reason augment the current legal standard without altering the existing requirement for showing profit sacrifice. In our view a switch to a rule of reason should also require a change of standard for showing profit sacrifice. The old standard based on the price-cost comparison was designed to limit the number of successful litigation based on predatory claim. Although, such legal standard was possibly necessary to limit frivolous complaints from weaker competitors at that time, nowadays economics provide a set of tools and conditions that enable antitrust authorities and judges to assess more accurately predatory claims than ever before. Second, comparing incremental costs with incremental revenues is technically more accurate to actually demonstrate the existence of actual profit sacrifice. Finally, in case of very strong evidence on exclusionary effect and recoupment we would also consider sufficient evidence of profit sacrifice not based on a detailed examination of cost and revenues.

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28 Decision of The Competition Authority (Case COM/05/03), 7th December 2004, concerning “the alleged predation by the Drogheda Independent Company Limited in the market for advertising in local newspapers in the greater Drogheda area.”
4 A Three-Step Rule of Reason

In this section we offer guidance on how to establish likely exclusion based on a rational theory of predation, we then discuss the importance of establishing a likely recoupment, and finally we propose two alternatives beyond price-cost comparisons to establish profit sacrifice.

4.1 Likely Exclusion

The means whereby predatory conduct ultimately harms consumers is through its exclusionary effect on existing or potential rivals. In some cases, however, predatory sacrifice may not be the cause of the victim's market exclusion or threatened exclusion; other factors may contribute, such as increased raw material costs or reduced demand. Furthermore, exclusion may be improbable if the prey has already incurred significant, non recoverable costs. The predator may need to have very deep-pockets to convince its potential victim to walk away from large sunk investments.

To prove exclusionary effects, a competition agency should rely on a well-articulated theory of rational predation. The aim is to provide an explanation as to why the predation target will prefer to exit rather than compete against the predator. The answer to this question requires an understanding of the extent and duration of the alleged predation, the relative financial strength of the predator relative to the prey and the victims' expected profitability of staying in the market.

Evidence that predation failed in the past, for instance, because rivals were not excluded, is useful but not conclusive. Indeed a predatory strategy could be maintained despite several periods of failure. In each new period the probability of success may be updated downwards. But if the potential gains substantially exceed the costs the expected return of predating might still be positive.

Bolton, Brodley and Riordan (2000,2001) - hereafter BBR - offer an exhaustive of the relevant factors which a competition agency has to assess to establish whether a predatory attack could lead the prey exit or stay out of the market. They identify various subsets of observable factors one can rely on to proof exclusion depending on the underlying mechanism of predation.

To prove exclusion resulting from financial predation a competition agency must show that predation reduces the prey's initial performance sufficiently to threaten the prey's continued financing and viability. There must be evidence that the alleged prey depends on external financing. Also the prey's external financing must be shown to depend on its initial performance. Otherwise the prey and its investors and creditors would be insensitive to a predation strategy. Cash flow is an obvious performance indicator but there may be others depending on the industry. Because predation also reduces its own profits the predator must be able to absorb initial loses by relying on internal sources of finance or better access to external credit than the prey.

Predation to eliminate a financially constrained rival and predation to acquire a reputation for aggressiveness are closely related. There are reputation effects if predator reduces price in one market to induce the prey and potential entrants to believe the predator will cut price in other markets or in the predatory market at a later time. The incumbent seeks to establish a reputation as an overaggressive competitor, based on some perceived special advantage or characteristic. In these circumstances creditors may find it even riskier to continue to support a financially constrained firm.

BBR note that reputation effect predation always involves two markets or two time periods: a demonstration market, where the overt predatory conduct occurs, and a recoupment market (or later time period), where the reputation consequences follow. The predator exhibits its predatory character (e.g. its feigned low costs) in the demonstration market (or current time period) in order to induce the

29 (see BBR, 2000 and 2001 for more details).
victim and potential entrants to believe that predator will cut price in another market (or later time period), thereby injuring actual or potential competition. Reputation effects are therefore more credible in a multi-market context.

Testing for ‘reputation’ is not a simple exercise. Reputation itself is not observable, and so one must rely on hypotheses predicated on a successfully established reputation. “No new entry” would be one such hypothesis, but by itself it is insufficient to confirm the existence of a deterring reputation (there also would be no new entry if the market were declining or stagnant). A strong case for the reputation hypothesis can be made if it is shown that even when the circumstances are quite favorable for significant new entry and rival firm expansion in the predator’s market (e.g., rapid market growth and legally binding constraints on the dominant firm’s expansion), little new entry actually occurred and the predator was able to delay its subsequent renewed expansion until it could well cover its costs. One should observe the predator itself expanding into other markets as conditions warrant, even tough no other firms enter or expand in those markets.

A reputation effect theory based on irrational toughness may be too easy to assert and too difficult to prove. BBR also convincingly argue the need to show that the predator knowingly adopted a reputation effect strategy. To this effect a competition authority can rely on:

(i) proof of a corporate plan to engage in reputation predation
(ii) publicizing or disseminating information likely to induce a reputation effect, such as information showing failure of new entry in a particular submarket due to price cutting by the predator
(iii) suppression of information that might reveal bluffing by the predator and, perhaps most importantly
(iv) repetition of the predatory action in multiple markets or over successive time periods, which strengthens the competition-reducing belief the predator seeks to induce

Finally it must be shown that the potential entrant observes the exit or other adverse effect experienced by the predator’s existing rival. Otherwise there can be no reputation effect.

To prove that an incumbent can deter entry by misleading the entrant into believing it has low costs there can be no transparency as to the cost structure of the incumbent. Further, cost-signaling is most plausible when the prey has reasons to believe the incumbent has recently reduced its variable costs, possibly in reaction to some exogenous, observable event. The possible cost reduction must be of sufficient magnitude to require the victim to exit or stay out. Low-cost signaling is a risky strategy to drive out an existing rival unless there are high re-entry barriers. If the predator attempts to recoup its losses by raising price after exclusion this risks revealing the signaling strategy to the prey and other potential entrants, causing them to upgrade their estimates of market profitability. In the absence of substantial entry and reentry barriers, rivals would then have an incentive to enter or reenter the market, preventing recoupment.

Proof of test market predation requires evidence that predatory conduct prevents a potential entrant from learning about demand under normal competitive conditions. It is highly indicative of test market predation if predator engages in secret price cutting only in the test market. Price cutting must be secret, for otherwise the victim will not be misled into thinking that market demand is low. The secret price cuts include those made in anticipation of entry, as well as following entry. Test market predation will not harm competition unless the victim is misled into believing that demand for its product is weak. BBR rightly point out that the standard should be measured not by whether the victim itself lacked knowledge of market demand, but by whether a “representative firm in the industry”— a rational firm—would be unable to assess demand. If other equally efficient information channels are available, such as market research or prospective customers, then a representative firm in the industry would not be confused, and a test-market jamming strategy would be implausible. Thus, there must be evidence that alternative information channels were unavailable, significantly more costly, or less accurate.

Finally, note that to prove signal-jamming predation it is unnecessary to prove that the initial sacrifice (i.e. price-cuts or other forms of predatory conduct) is secret, since the object is simply to obfuscate the
test market results by severe price cutting. Instead of being mislead into believing that demand is weak, the victim may simply be unable to assess the demand for its product due to the signal jamming effect.

4.2 Likely Recoupment

Recoupment is intrinsic to any rational theory of predation; without such an expectation, predatory behavior is not sensible economic behavior. Proof of actual recoupment is not a necessary ingredient of predation only a showing of probable recoupment should be required. This requires evidence that market conditions and the predator's conduct makes future recoupment likely causing prices to rise above the pre-predation levels. Note that recoupment need not be confined to the market in which predatory behavior occurs. A firm can raise barriers to entry to a market by developing a reputation for predatory conduct, either in that market or in other markets.

Before examining the various factors that should be taken into account in a recoupment test, it is important to note that recoupment differs according to whether the predatory attack is directed against an existing competitor or against an entrant or potential entrant. In the former case, the target is a rival who has been exercising a downward influence on the predator's price. A successful predatory attack allows the predator to raise its price above the pre-predation level, more than recovering loses incurred during the sacrifice period.

In the case of predation against an entrant or potential entrant, the predator lowers its price in order to make entry appear unviable so that the recent entrant exits or the potential entrant stays out. If and when that strategy succeeds, the predator will raise its price back to the pre-predation level. In all likelihood, it would not try to raise it above that level. If it could do so profitably, it would have done so already before the entrant appeared. Thus, in this case, recoupment is not achieved through an ability to reap more profits than before, but through the restoration or entrenchment of a position, that provides the previous level of supra-competitive profits.

Recoupment analysis takes into account a variety of structural conditions that contribute to the likelihood that a predatory pricing strategy will be successful.

1 Entry is Unlikely After the Prey is Excluded or Disciplined

Entry barriers after exclusion are essential if a predator is to have any hope of recovering the losses it will incur at the sacrifice stage. Once it drives rivals out, or deters a potential entrant, the predator needs to raise its price high enough to earn the supra-competitive profits that will justify its initial sacrifice. Ordinarily, those profits would attract entrants, driving prices down. If prices fall back to pre-predation levels then the sacrifice would not pay-off and predation is irrational.

In principle, assessing predation at the recoupment stage (i.e. post-exclusion) is easier than at the sacrifice stage (pre-exclusion). At the recoupment stage, it may be possible to observe whether the predator enjoys increased market power relative to the scenario without predation. In contrast, to assess the prospect of recoupment at the sacrifice stage a competition agency must rely on estimates regarding future events and market conditions. However, this is no impossible obstacle. The assessment of likely recoupment bears similarities with the analysis of merger-induced entry in merger cases. A merger eliminates the competition constrain that the merging parties impose on each other and reduce the intensity of competition by increasing concentration. A merger may thus increase the expected profitability of entry to overcome existing entry costs. Similarly, by inducing exit or deterring entry, predatory conduct has an impact on market structure.

It follows, that in assessing likely recoupment at the sacrifice stage it is important to make a forward looking assessment of entry prospects after exclusion. Entry must be shown to be unlikely, insufficient
or belated. In merger control entry likelihood analysis asks whether an entry plan would be profitable to carry out in the post-merger environment. Similarly in predation cases, likely recoupment depends on whether entry is likely post-exclusion. Entry can be profitable at pre-exclusion prices even if it was not profitable before the prey left the market. If predatory conduct has the feared anticompetitive effect, at the recoupment stage industry output will decline, thereby creating additional potential sales for an entrant beyond what had previously been available. The result is to make entry more attractive than it had previously been. However, when considering the likelihood of entry after exclusion, competition agencies must also pay attention to the time necessary to accomplish it.

Post-entry profitability is critically affected by two factors, the intensity of competition post-entry (in this case, after exclusion and after new entry), as reflected for example in expected price levels, and the extent to which entry costs are sunk or unrecoverable. Sunk costs matter in two ways:

First, sunk costs increase the risk of failed entry. This may lead to a trade-off between likely exclusion and likely recoupment. If sunk costs are high, it may be difficult to drive existing rivals out of the market. Sunk costs act like an exit barrier. On the other hand, recoupment may be more likely. For new entrants sunk costs are an entry barrier. Conversely, if sunk costs are low exclusion may be more likely yet recoupment may be difficult unless other barriers to entry exist.

Second, sunk costs also create an important asymmetry between incumbents and potential entrants. Once costs are sunk, they are no longer a portion of the opportunity costs of production. Thus, sunk costs allow an incumbent firm to commit to respond aggressively to new entry. In fact, past predatory responses to new entry can operate as an entry barrier, particularly if the predator acquires a reputation. In such cases, the would-be entrant anticipates that any attempt to enter the market will stir up a predatory response from the incumbent. Anticipating this, the firm declines to enter. Once raised as a barrier, a firm’s reputation for predation may allow the incumbent to earn supra-competitive returns without fear of entry dissipating those returns, even if there are no structural barriers to entry into the market.

Whether assessing predation at the sacrifice or at the recoupment stage historical evidence on entry should be analysed with care to ensure that it is probative. First, evidence of no significant entry can mean the market is competitive since large-scale entry does not happen because it is unattractive, since price is down around cost. Conversely the fact that entry has occurred in the past does not imply there are no barriers to entry or that entry is necessarily easy. In general, a clear signal of low barriers is provided only by effective, viable entry that takes a nontrivial market share.

(2) Re-entry is Unlikely

Re-entry barriers are equally important. A reentry barrier may be defined as the cost that a firm that has exited a market must incur to resume production. If the firm can costlessly reassemble the physical and human capital dispersed upon exit, then no reentry barriers exist. In such case, a predator cannot recoup lost profits because its rivals remain viable even after they cease production. Hence, there can be no motive for predation.

Re-entry barriers exist, for example, when it is difficult and expensive for a firm that has left the market to repair the damage done to its reputation when it exited. Alternatively, it may be difficult for some firms to rehire the specialists who lost their jobs when the firm went out of business, or to find new ones to replace them.

(3) Assessment of the competitive constrained exercised by the excluded rival

The possibilities to recoup an initial sacrifice depend also on the identity of the foreclosed prey. Suppose the prey was relatively efficient, produced a close substitute to the predator, was a potential entrant on various markets on which the predator was established, or a maverick whose presence impeded coordinated behavior with other rivals. It is likely that the exclusion of such rival will significantly
increase the predator’s market power. Again, such assessment bears similarities with the analysis of competitive effects in horizontal mergers where the emphasis is on the extent to which the merging parties were close competitors pre-merger.

### 4.2.1 Treatment of recoupment in case law

In the AKZO judgment, the European Court of Justice noted that a dominant firm has no interest in pricing below cost “except that of eliminating competitors so as to enable it subsequently to raise its prices by taking advantage of its monopolistic position” (§71). Consequently, it can be argued the Court presumes recoupment and does not expressly require the need to prove it in order to establish predation.

In Tetrapak the ECJ upheld the decision of the Court of First Instance, which declined to lay down the prospect of recouping losses “as a new pre-requisite” for establishing the existence of predatory pricing, observing that it must be possible to penalize predatory pricing whenever there is a risk that competitors may be eliminated.

Such remarks are at odds with the now prevalent view that antitrust laws must protect consumers, not competitors. It is of no consequence that a firm’s unilateral conduct may eliminate a competitor so long as the elimination of that competitor does not result in economic harm to consumers. Lower prices or other forms of aggressive competition cannot be predatory unless there is a likely prospect of recouping the initial profit sacrifice. Only then, can there be a presumption that consumers will be harmed by losing more in the recoupment stage than they win in the sacrifice stage.

However, in Compagnie Maritime Belge, Advocate General Fenelly suggested in his opinion that the need to establish an intention or a possibility of recoupment should be part of the test for abusively low pricing by dominant undertakings. Even though the ECJ did not follow this suggestion, the ECJ was silent on this aspect and appeared, as done so in its earlier decisions, to hold open the possibility whether it would require proof of the possibility of recoupment in future cases. He further stated that the pursuit of the objective of Art. 3 (g) EC Treaty of ensuring the establishment of an internal market in which competition is not distorted would be significantly impaired, if only a price cost comparison would be used as an absolute yardstick against which all possible abusive or exclusionary practices had to be assessed (§137).

### 4.2.2 Dominance as evidence of recoupment?

It has been argued that recoupment is in fact taken into account indirectly in the showing that the predator is dominant, which arguably is a precondition for a finding of predation under Article 82. Defendants of this view argue that a dominance assessment necessarily calls for an analysis of entry barriers so it does not matter whether there is a separate recoupment condition or not. This


31. AG Fenelly also argued that, while AKZO established the circumstances under which below-cost prices were abusive, it did not affirmatively hold that above-cost prices could never be abusive as well.

32. Proponents of this view often argue that if dominance is not sufficient for recoupment one could allow defendants a “recoupment defense”. That is, a defendant can rebut the presumption dominance implies likely recoupment. This approach is rather disingenuous. First, it shifts the burden proof regarding the competitive effects of predation from the competition agency to the firm. Namely, the agency must only show there was sacrifice but the firm must prove recoupment was unlikely. Second defendants will always prefer to rebut the dominance finding itself rather than the presumption that dominance leads to recoupment. Except in extraordinary circumstances, we would not expect a defendant to accept a finding that it is dominant. Thirdly, much of the information needed to assess the post-predation market structure such as the likely response of non-excluded rivals, potential entrants and customers, is more easily available to the competition agency. Without access to such information, it is unlikely that the defendant can build a defense by proving the impossibility of recoupment - precisely when it is innocent.
view is mistaken. First, dominance is not sufficient for recoupment and second, more strikingly, it is not even necessary.

**Dominance is not sufficient for recoupment**

As earlier explained recoupment depends on whether the potential gains after exclusion more than offset the initial profit sacrifice. In turn, potential gains derive from the difference in market power the predator enjoys after rivals are excluded. There is likely recoupment if predation leads to a significant increase in market power. Recoupment is not systematically related to dominance, which measures the level of market power of the predator before predation. Market conditions after a predatory episode are generally different to market conditions ex-ante, before predation. Even market structure, as explained above, is affected as rivals exit the market or potential entrants stay out. Consequently, an ex-ante assessment of dominance is often unreliable as to the ability of the predator to exercise increased market power post-exclusion.

To assess likely recoupment a competition agency must first determine how much more market power the predator will have. As in merger control, this depends on the extent to which the prey was constraining the predator. For example, if the prey offered close substitutes its exclusion may likely allow the predator to increase prices significantly. None of this matters to the assessment of ex-ante dominance.

Likely recoupment depends also on the extent of the actual sacrifice needed to induce exclusion. If predation leads to exclusion only at high cost to the predator in the sacrifice stage then recoupment needs to be substantial. Again, dominance offers little indication on the extent of profit sacrifice required to induce exclusion.

There are at least two further reasons why dominance is poorly related to recoupment. First, as McGee (1950) argued persuasively a firm may leave the market but may recover some of the sunk investments by selling out its assets to another rival or a potential entrant. Hence, the assets stay in the market, making it difficult to recoup loses after the sacrifice episode. Evidence of dominance is irrelevant in this case.

Similarly, predatory pricing requires both a price decrease and an output increase. Price cutting alone will not work because the objective is to take market share away from rivals. What matters is not whether the predator is dominant but whether it owns spare capacity to cover (temporarily) what was supplied by those rivals and possibly any additional demand stimulated by the price decrease. Capacity constrained firms, even if dominant, will be unable to predate successfully.

**Dominance is not necessary for recoupment**

A successful predator need not enjoy dominance in the market in which it sacrifices profits. A reputation for toughness in the face of competition, earned through predatory behavior in one market, can spill over to other markets where the predator faces potential competitive threats. Predatory pricing in a small market minimizes the profit sacrifice. However, competitors may be deterred or delayed to entry or expand in larger markets where the predator operates.

Somewhat ironically, the most famous predatory pricing case in the EU is a good example of predation in one market to deter entry into a larger one - AKZO Chemie BV v Commission (Case 62/86). The allegation in this case was that AKZO was attempting to limit the expansion of a competitor, ECS, into the European plastics market. AKZO held a "dominant" position in this market that might have been significantly eroded by the expansion of ECS. However, AKZO's alleged predatory conduct was not targeted in this market, but rather at the activities of ECS in the UK market for flour additives, a
relatively small sub-market within the wider European market for organic peroxides. In fact, if the EU market for plastics was large enough and ECS and AKZO were close competitors the incentive to predate might have also existed even if AKZO had not been dominant in the larger market.

AKZO is an example of a broader phenomenon. Dominance is not necessary for recoupment. It is also not necessary for rational predation. To predate successfully, all a predator needs is some inherent advantage over its prey. This advantage may not translate into substantial market power before predation. Note also the ability to lower the market price requires sufficient excess capacity to flood the market and serve the increased demand – it does not require significant market power ex-ante.

Indeed, it may be very costly for a dominant firm to predate. A firm with a large market share would suffer considerable losses at the sacrifice stage, since low prices will extend over a large sales volume. Moreover, if the same firm is indeed dominant there may be limited gains from further increasing its grip on the market. The opposite is the case for a firm, which may not be dominant under conventional criteria yet predates in the hope of recouping its earlier loses by exploiting a dominant position in the future.

There is no economic justification for making dominance a requirement for predation under Article 82. Some may argue that only predation by dominant undertakings can be deemed abusive. However, this is a restrictive interpretation of Article 82. If a firm predates and thereby acquires dominance, it will increase prices at the recoupment stage. This generally leads to consumer harm. Such conduct is abusive because the price increase derives from a dominant position acquired by illegitimate or anti-competitive means, not by competition on the merits.

A popular argument is that the requirement to show ex-ante dominance has merit as a safe haven. Alas, at best, it is a poor one. To be effective a safe haven must have two properties. First, it must be simple to implement, second it must be a good proxy for absence of competitive harm. Dominance fails the first criterion, it is notoriously difficult to assess whether a firm is dominant. Mostly this is because the level of market power at which dominance arises is undefined. Except in extreme cases (when market power is very high, or when it is non-existent) the analysis of dominance will always be controversial. It is also very sensitive to market definition given the relevance of market shares.

Unfortunately, in predation cases, dominance also fails the second criterion. Successful predatory conduct to acquire dominance is likely to be more harmful to competition and consumers than predatory conduct by a dominant firm. A dominant firm may predate to deter entry but its incentive to predate to further extend its dominance is likely negligible. In contrast, if a non-dominant firm successfully predates and drives rivals out of the market the increase in prices resulting from the creation of dominance can be significant.

### 4.3 Actual Profit Sacrifice Condition

Why look at sacrifice? The reason is a predatory strategy requires incurring temporary losses. As a result, in the absence of evidence of actual profit sacrifice, predation can simply not be established. Even if the conditions for exclusion and recoupment are present, a firm may prefer not to engage in predatory conduct, particularly if it fears the wrath of effective antitrust law enforcement.

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33 In the United States, the prohibition on attempts to monopolize a market under section 2 of the Sherman Act opens the door to allegations of predation by a firm without a substantial degree of market power.

34 Dominance may be necessary to engage in exclusionary practices that raise rivals costs, e.g., in refusal to deal cases. In general, a firm without significant market power upstream may not be able to raise the costs of its downstream rivals. With respect to such exclusionary practices, dominance (or its absence) may be closely related to both the likelihood and the degree of competitive harm.
In theory, a predator will sacrifice profits when its marginal cost exceeds its marginal revenue. In this case, the last unit of output costs more to produce than the revenues it generates once sold. The firm would thus be better off not producing the extra unit. In practice, however, these marginal costs and marginal revenues are notoriously difficult to measure. It would also be elusive to calculate the profit-maximizing price or output level to compare with the actual output and price level. Instead, to show actual sacrifice we propose to follow two different approaches:

1. Determine whether the incremental costs of the alleged predatory practice are above incremental revenues.

2. Determine whether there exists a more profitable course of action in the absence of exclusion.

### 4.3.1 Incremental Revenues vs. Incremental Costs

The most direct way to test for a temporary profit sacrifice is to compare the incremental costs and revenues of the alleged predatory practice. That is, does the conduct of the firm actually generate more revenues than what it costs? If the incremental costs of a given practice such as expanding output or increasing quality is higher than the associated incremental revenues clearly this provides immediate evidence of profit sacrifice.

This approach is sufficiently flexible to be applicable also in non-price predation cases, simplifying the sacrifice inquiry relative to traditional price-cost tests. For example, following entry of a threatening rival a dominant firm may ramp up its advertising campaign to a point beyond what a normal competitive response would be. In fact, the firm is sacrificing profits because the extra revenues generated by that extra advertising are less than what it costs.

Antitrust authorities must not make complex judgment calls about which costs should be considered variable and which fixed and when to use one cost measure over another. However, it is often hard to obtain reliable estimates of the relevant incremental costs associated with a potentially predatory practice. This requires the exact determination of the predatory activities as opposed to normal conduct. For instance, in case of new entry it may be difficult to determine the difference between total cost under accommodation and total cost under predation, which would provide the relevant incremental cost. In practice, however, the predatory action may occur in steps, which can provide a useful benchmark to compute the relevant incremental costs. In this situation, incremental costs can be determined by simply comparing total costs before and during the alleged predatory behavior. In other cases, it may be possible to estimate incremental costs by comparing the costs of different business strategies across similar markets.

Once the proper benchmark has been found for incremental cost, the same is used to compute incremental revenues. When the firm offers steep discounts or adopts other form of non-linear pricing, it may be more accurate to compute the per-unit incremental revenues rather than using the market-wide per-unit price.

### 4.3.2 Other, More Profitable Actions

It may not always be possible to gather sufficient data to determine whether incremental costs are above incremental revenues. In such case, it may still be possible to establish sacrifice if the competition agency can show that an alternative course of action for the firm exists that would have led to greater profits. For example, an incumbent airline may respond to entry by a financially constrained firm by doubling the number of flights on that particular route. In contrast, on other routes where entrants are
not financially constrained the incumbent responds by reducing (or not significantly increasing) the frequency of its service (see section 5 for a discussion of the American Airlines case). In this situation, it could be convincingly argued that the response to entry in the first route involves profit sacrifice, in comparison with the response to entry in "normal" circumstances (i.e. when predation is unlikely to succeed because entrants have deep pockets).

This alternative route to show actual profit sacrifice should be used when there is strong evidence regarding likely (or actual) exclusion and likely (or actual) recoupment. This reflects our view that there should be a sliding scale as regards the standard of proof of actual sacrifice. The more convincing the evidence on the first two conditions the less detailed the required analysis to establish sacrifice.

When assessing alternative actions, one must avoid three common fallacies. First, as already discussed profit sacrifice refers to avoiding a more profitable course of action, not the most profitable. Second, sacrifice must be assessed with reference to a hypothetical response in an environment where there is no exclusion but rivals compete non-cooperatively. Thus there is no sacrifice even if a more profitable response to entry might well be to set a duopoly price in tacit collusion with the entrant. Third, entry ordinarily reduces an incumbent's profits even if the incumbent responds optimally. That profit reduction must not be confused with sacrifice. That is, the relevant counterfactual must also consider likely entry if it is expected to take place independently of predation.

### 4.3.3 Using Cost-based Rules as an Alternative

In some cases, it may be possible to rely on traditional price cost comparisons to show profit sacrifice. However, these comparisons offer only a conservative approximation. First, in practice the price is often computed as the average revenues of the firm's sales over the entire relevant product market. However, this is merely a proxy for incremental revenues. Confusing averages with increments actually favors the predator that tends to earn less on incremental sales. Comparing prices (average revenues) with some relevant cost benchmark can then be a poor test to determine whether the incremental profits associated with an alleged predatory practice are negative or positive. Second, the use of an average measure of cost is also problematic as it could be a poor proxy for marginal costs.

There has been much discussion on what the appropriate cost benchmark should be. For the sake of completeness, we review some of the various benchmarks that have been proposed in the literature. However, we stress that in most cases, it may be more appropriate, and no more difficult, to rely on direct comparisons of incremental costs and revenues or to assess the relative profitability, but for exclusionary effects, of alternative courses of action.

#### 4.3.3.1 Average variable costs (AVC)

Price-cost tests originated with the work of Philip Areeda and Donald Turner (1975). Areeda and Turner argued that predation only arises when prices are held below short-run marginal cost (SRMC). As Ordover and Saloner (1981) point out:

"Any price lower [than the predator's short run marginal cost] is not short-run profit-maximizing hence must involve sacrifice of profits, which is the first prerequisite for predatory conduct."

Recognizing that, in practice, measuring marginal cost would be extremely difficult Areeda and Turner propose to use average variable costs. They offer the following test: a price at or above reasonably anticipated average variable cost should be conclusively presumed lawful, while a price below reasonably

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35 A monopolist price is always above marginal revenue, only in perfect competition does price equate marginal revenue.

36 When a firm faces downward sloping demand - the usual case - the marginal revenue curve is also declining with output.
anticipated average variable cost should be conclusively presumed unlawful. The Areeda-Turner rule is designed to restrain firms’ pricing behavior as little as possible, reflecting the authors’ view that predation is a rare phenomenon.

One difficulty with this test is that AVC is not necessarily a good approximation of SRMC. Either one may greatly exceed the other in any particular case. AVC is often a poor substitute because it tends to fall below MC (and therefore underestimate it) at higher output levels, leading to false negatives when used as single test for predation. Edlin and Farrell (2002) argue that for a monopolist, comparing price with AVC can be a conservative test masking profit sacrifice. Because for greater output levels MC will be above AVC, this is a poor proxy for a price-MC test, let alone for a comparison between marginal cost and marginal revenue.

Another significant criticism is that the AVC standard favors defendants with high fixed and low variable costs, such as firms in the transportation and software sectors. In those industries, it is relatively easy for low prices to remain above AVC. Therefore, using the AVC test might allow incumbents to keep new entrants from recovering their (fixed) capital costs for a very long time, which in turn would deter entry.

4.3.3.2 Average Avoidable costs (AAC)

The use of average avoidable costs in price-cost tests has been gaining momentum in recent years. The AAC test is really a variant of the Areeda-Turner test. Under the AAC test, price is compared to the average of variable costs plus non-sunk, product-specific fixed costs over a given range of output. The objective is to determine how much a firm would save by not producing over that range. Baumol (1996) argues that average avoidable cost is a sounder economic floor to establish profit sacrifice than AVC, for two reasons:

- AAC is a better estimate than AVC of the true cost that a firm incurs when it produces output that is sold at an allegedly predatory price. When a firm increases output in a predatory campaign, it may have to incur more costs than just those that happen to vary with every unit of output sold, which the AVC test measures. Sometimes a predator will also incur substantial fixed costs when it increases its capacity to absorb extra demand.

- The AAC threshold may have the additional advantage of better identifying prices that can hurt an equally efficient rival. The relevant comparison of a unit of output produced by the incumbent or an entrant is between the avoidable cost of the incumbent and the average total cost of an entrant. A more efficient competitor will be able to enter where its average total costs are less than the price, so provided that price exceeds the incumbent’s avoidable costs, entry will only occur when it represents a more efficient way of producing the product.

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37 Areeda and Turner explicitly recognized that AVC may be a poor approximation of SRMC. However, AVC is normally much easier to estimate than marginal cost, since the latter cannot be deduced from a single observation, but must entail evaluation of the effect of a change in output on the total cost of the firm.

38 To address these problems, Areeda, Hovenkamp and Turner (1996) suggest in their antitrust treatise to switch to average total costs if they are exceeded by the predator’s marginal costs. They also take the position that when marginal costs fall below average variable costs, one should go by average variable costs not just as a surrogate but on the merits, because if prices are below average variable costs it would be more efficient for the firm to close operations.

39 Alternatively, a predator might reallocate a fixed-cost input from one of its other product lines to the line in which it is carrying out its predatory attack. The avoidable cost concept captures that possibility as well.
Precisely what should be counted as an avoidable cost also depends, in part, on the time period considered. Ordinarily, the longer the period, the larger the total and average avoidable costs will be. This is true because more and more sunk costs become avoidable costs over time.

More recently, Bolton et al. (2000) propose to calculate AAC over the “predatory increment” in sales achieved by the defendant, rather than over the predator’s entire output. This is a critical distinction because many fixed costs may be avoidable over the predator’s entire output but not over the portion of that output represented by the predatory increment. AAC, calculated as proposed by Bolton et al, may therefore not differ much from AVC in many cases.

4.3.3.3 Average total cost (ATC)

A common concern is that equally efficient firms might have different ratios of fixed and variable costs. For example, Williamson (1977) observes that more capital-intensive firms can have lower variable costs even when they are less efficient than more labor-intensive firms are. He thus advocates using average total costs (ATC) as a better means of sorting out the efficiencies of firms.

The ATC test is not without drawbacks either. First, while it may seem that measuring ATC should be easy, it turns to be difficult – so difficult, in fact, that some economists have argued that accurately measuring ATC for a good sold by a multi-product firm is impossible. The basic problem is that when a firm produces several products, attributing common costs to a single product line is an arbitrary process.

One might be tempted to solve the allocation problem by assigning shares of common costs to the firm’s different product lines according to the percentage of overall corporate revenue they each produce. The problem is that sometimes one business division uses a source of common costs more than another does, but it will not be clear how much more. If the common cost is nevertheless allocated according to revenue, there will be a clear error in allocation, though it will not be measurable.

Another drawback to the ATC test is that pricing below ATC for some period may be a rational response to entry even if its result is not the elimination of competition. For example, after a new firm enters with a low price, an incumbent may experience a decline in demand such that marginal cost pricing allows it to cover its variable, but not all of its fixed costs.

ATC is usually computed over the entire product market. It can thus provide a sense of the overall long-run profitability of the firm on that market. However, in some cases, such average measure masks actual sacrifice. For example, in Brook Group, the alleged predator Brown & Williamson priced below cost its ‘generic’ cigarettes. Although the market was defined more broadly, the U.S. Supreme Court focused on the alleged predatory behavior on the generic segment and not on the overall market profitability of B&W on the cigarette market. Had the focused been on the overall profitability of B&W on the cigarette market, no sacrifice would have been established.

4.4 Legitimate reasons for profit sacrifice

Elhauge (2003) questions the merits of requiring sacrifice as a constitutive element of predatory conduct. He points out that several forms of desirable market activity involve profit sacrifice. Indeed, every investment - including investments in building new facilities, training personnel, or making organizational or distributional changes - involves some sort of initial sacrifice, which pays off only if
the firm succeeds in the marketplace. Elhauge warns that such investments could be erroneously
classified as predatory despite the fact that, in general, they enhance consumer welfare.

It is uncontroversial that both desirable and undesirable practices may involve profit sacrifice. However,
not all instances of profit sacrifice fit the economic definition of predation. Recall sacrifice is established
relative to the “profit that could be earned under competitive circumstances were the rival to remain viable”.
Investments in fixed assets, process innovation or new product development would generally be
justified irrespective of whether or not rivals are forced to exit the market.

Nonetheless certain investments, for example to obtain a patent, would typically be unprofitable but for
the prospect of later monopoly returns reaped by (lawfully) excluding competitors. Again, such
instances are unlikely to be mischaracterized as predation under the three-step structured rule of reason
we propose. Identifying “likely exclusion” requires an assessment of the reasons why the alleged prey
would exit the market in reference to a valid theory of rational predation. For instance, extraordinary
investments in R&D by a dominant rival could be deemed predatory if all its rivals are severely
constrained financially. Yet an incumbent that invests heavily and wins a patent race against one or
more financially healthy rivals is competing for the market, not predating.

Nevertheless, the world is complex. As shown in section 2.3.1 many practices that involve a (short-run)
profit sacrifice in the expectation of future recoupment could be pro-competitive - even if predation
could be rational in the given circumstances. Thus, per-se illegality is inappropriate even if there is
conclusive evidence of profit sacrifice, leading to exclusion and increased market power.

As a result we suggest that sacrifice, exclusion and recoupment are necessary and taken together
sufficient to establish a presumption of predation. The defendant may rebut such presumption by
showing its conduct is desirable despite its exclusionary effects and likely, on balance, to increase
consumer welfare. Nevertheless, the burden of rebuttal falls squarely on the defendant.

European Courts have given mixed signals as to the relevance and scope of an efficiencies defense with
respect to predatory conduct. According to the Court of Justice, any business justification for below-
cost pricing is only available to the extent that prices are above variable costs. In AKZO the Court
stated:

“Prices below average variable cost (that is to say, those which vary depending on the quantities produced) by
means of which a dominant undertaking seeks to eliminate a competitor must be regarded as abusive. A
dominant undertaking has no interest in applying such prices except that of eliminating competitors so as to enable
it subsequently to raise its prices by taking advantage of its monopolistic position ….”

and in Tetra Pak II, the Court also held:

“Prices below average variable costs must always be considered abusive. In such a case there is no conceivable
economic purpose other than the elimination of a competitor, since each item produced and sold entails a loss for
the undertaking”

These statements are clearly at odds with economic theory and a policy of per-se prohibition of below-
cost pricing could impede (and further chill) welfare-enhancing behavior. This is for two reasons.

Limit pricing may also be desirable yet be regarded as predatory if predation is characterized as “sacrifice but-for exclusion
and recoupment”. It is for this reason that in section 2.3.2 we argue to determine whether limit pricing is predatory only an
ex-post assessment is possible.
(i) First low prices or other forms of aggressive behavior may be a response to price reductions by rivals or to market events outside the firm’s control, seeking to maintain its competitive position in the market (reaction defense).

(ii) Second, recoupment may result not from the ability to exercise increased market power after rivals are excluded but from the market expansion effects of the initial sacrifice (efficiencies or market expansion defense).

The burden of establishing a legitimate business justification should fall on the alleged predator. To make its case, the firm will need to show that it was pricing below cost for legitimate, non-predatory reasons. It must be able to support the conclusion that it would have set the same prices even if doing so had not harmed competition. Specifically, the company should have to show either that circumstances forced it to price below cost, or that its prices were part of a normal business practice involving a brief period of losses.

4.4.1 Reaction to changes in market conditions

Pricing below cost may be an attempt to minimize losses stemming from unexpected market developments, such as excess capacity, product obsolescence, or shrinking demand.

If an industry has an unsustainable number of firms so that one or more firms will ultimately be forced to exit in the medium to long term, and if the firms do not know their rivals’ costs, prices might fall below cost as the firms struggle to survive until one firm exits. Short-term losses can then be recovered by the surviving firms after industry rationalization. Large-scale entry can reduce each incumbent’s share of demand rapidly, thereby creating excess capacity and leading to the same situation as an industry downturn.

Demand is also cyclical in some industries, and firms may need to sell below cost during the slumps to maintain customer relationships, avoid shutdown and re-start costs, and/or storage costs.

Low pricing in any of these circumstances benefits consumers in the short run and may promote long run consumer and social welfare in cases where it preserves the price cutter as a competitor or potential competitor in the challenged market.

4.4.2 Market expanding efficiencies

As explained in section 2.3.1, low pricing or aggressive behavior may be justified by market expanding dynamic efficiencies. A firm may price below its cost to promote a new product or enter a new market, entice consumers to shop at an existing outlet, reduce costs through learning-by-doing, or increase the value of its product through network externalities.

Such dynamic efficiencies explain how the higher sales resulting from lower prices might increase future profits even with no exclusionary or disciplining effect. Evaluation of market expanding efficiencies may raise difficult issues of characterization as they also involve recoupment. On the one hand, market expansion provides pro-competitive explanations for recoupment of losses from below cost sales. Recoupment comes not from output contracting monopoly pricing, but from output expanding efficiencies. On the other side, the mere presence of these efficiencies does not preclude a coexisting predatory strategy to exclude or discipline rivals. Two scenarios arise:

First, the exclusionary impact of lower prices and the resulting increase in market power for the predator may be present but insufficient, in itself, to justify the initial profit sacrifice. However,
it is possible that a firm will predate if the additional gains that result from market expansion together with the increased market power, compensate for the initial sacrifice. Given this possibility, we prefer to be cautious. Unless a firm can recoup the full extent of its initial sacrifice by exercising increased market power after exclusion, a competition agency should not intervene. This could slightly raise the risk of false negatives, but is consistent with our objective of placing the burden of proof regarding market expanding efficiencies on the defendant.

In another scenario by exercising increased market power after exclusion the predator can entirely recoup its initial investment. Hence, we have predation. However, efficiency gains from learning curve effects or network externalities could be substantial. The resulting incentive to reduce prices could more than offset the incentive to increase them after rivals are excluded. Thus predation could, on balance, benefit consumers in the same way a merger to monopoly can reduce prices if it leads to significant marginal cost reductions.

To sort out these differing effects we endorse the suggestions by Bolton et al (2001) that a market expanding business justification defense should have three elements:

1. Plausible efficiencies gain. The increased sales resulting from the below cost pricing plausibly increases efficiencies, e.g. reduces cost through learning by doing or other increasing returns to scale effects.
2. No less restrictive alternative. The efficiencies gained cannot reasonably be achieved by a means substantially less restrictive of competition.
3. Efficiency-enhancing recoupment. Recoupment of the investment in below cost sales stems from efficiency-enhancing factors, e.g. higher product quality or lowered cost, rather than from increased profits through eliminating or disciplining a rival.

Bolton et al (2001) argue that the defendant should have the burden of proving the first and third elements—efficiencies gain and efficiency-enhancing recoupment. However, the burden to establish the second element—no less restrictive alternative—should be allocated between the parties. We feel, however, the defendant has superior information also regarding less restrictive alternatives and should thus bear the burden of proof fully.

4.5 Is the proposed approach applicable to assess all exclusionary practices?

The relative success with predatory pricing doctrine has led some US courts and commentators to try to generalize it into a global standard for determining the defining characteristics of abusive conduct. The US Department of Justice has argued in recent leading antitrust cases that it is relevant to ask whether the conduct would make economic sense for the defendant but for its elimination or lessening of competition. In essence, the Department of Justice argues "conduct is not exclusionary or predatory unless it would not make any economic sense for the defendant but for its tendency to eliminate or lessen competition".

Undoubtedly this "no economic sense" standard goes beyond "sacrifice but for exclusion and recoupment". Indeed,
it accounts not merely for actions that entail a profit sacrifice but also those that are not profit seeking and make no economic sense but for its exclusionary effects. On the other hand, the “no economic-sense” test is much harder to implement in practice. Whereas it is usually possible to provide objective evidence of profit sacrifice it will be more difficult in general to determine whether some action is profit seeking.

In any event, we believe that neither approach offers a valid and operative description of all forms of exclusionary practices. Examples abound of practices which are potentially exclusionary, yet involve little or no sacrifice of profit, or some sacrifice in a context where recoupment is achieved simultaneously an in a way inextricably linked to it. For example, some forms of raising-rivals costs involve no profit-sacrifice. Therefore, none of these tests is appropriate as an overarching substantive standard to separate benign from exclusionary conduct. It follows that the proposed three-step structured rule of reason applies only to predatory practices that meet the adopted definition of predation.

42 In general, any strategy that raises rivals' costs is likely to be preferable (from the predator's view) to predatory pricing because it (a) is less expensive, (b) can be profitable even if it does not ultimately force the victim to exit, (c) does not require the sacrifice of short-run profits, and most importantly is more likely to be credible.
5 An illustration: the American Airlines Case

In 1999, the US Department of Justice (DOJ) sued American Airlines for alleged predatory behavior on routes out of its hub in Dallas – Fort Worth Airport (DFW) from 1995 to 1997. The District Court granted summary judgment in favor of American in 2001, and in appeal, the U.S. Court of Appeal of the Tenth Circuit upheld the summary judgment in 2003. The judgments have since triggered a wave of comments. Using the facts and data provided in the Courts’ judgments and various filings of DOJ we review the case in light of our approach to assess predation. Of course, such an exercise is plainly academic and its only purpose is to illustrate the three-step methodology. We pretend neither to provide an expert opinion on this case nor to make any judgment on the arguments offered by the parties and the judges.

DOJ claimed that American engaged in predatory behavior against three low cost carriers (LCCs), Vanguard Airlines, Sun Jet and Western Pacific. DOJ maintained that American engaged in such an exclusionary conduct to protect its hub dominance at DFW. Prior to these episodes of predation, another LCC, ValueJet, had succeeded in establishing a base of operation in Atlanta, the hub of Delta Airlines, another network carrier. Delta accommodating strategy resulted in a significant loss of market shares and revenues. According to DOJ, such experience convinced American that it had to be overly aggressive against LCCs to avoid the same fate at DFW.

One important aspect of this case is that DOJ did not challenge American’s conduct as strid o serso predatory pricing (see Werden, 2003). In fact, American’s fares were never below those of its rivals. The alleged predatory conduct was the money-losing capacity addition. American responded to entry by LCCs by first matching the LCCs fares and then either by increasing the number of frequencies or using larger planes, or a combination of both. DOJ claimed that such conduct did not make sense economic but for preventing the LCCs to establish a hub at DFW.

5.1 Evidence of likely exclusion

Following our proposal, likely exclusion is assessed first. Under this header we attempt to establish whether American had adopted a predatory strategy that was likely to force the LCCs out of the markets. DOJ claimed that American was building its reputation of “predator” against any LCC whose ultimate goal was to establish a mini hub at DFW. Even though DOJ did not appear to rely on other modern economic theories of predation, there are some elements of financial predation scattered here and there the filings that suggest that a modern theory of “deep pocket” could have been developed.

Financial predation?

First, the three LCCs were relying on external financing to launch and develop their operations while American Airlines had much “deeper pockets”. In general, experience in the airline industry has shown that new airlines, and in particular independent LCCs, tend to rely on external funds to develop their operation. Second, such reliance on external funds of newcomers is common knowledge. American Airlines, therefore, must have known that its preys had to turn to their debtors for additional funds. The LCCs could not possibly rely on a “war chest”. Third, generally a LCC’s entry strategy is split in several steps. The first stage consists of selecting one or two profitable routes out of a specific airport on which the LCC starts operating flights. Then if successful in the first stage, a LCC may ramp up its operation gradually by operating new routes out of the same airport. In terms of ground crew, maintenance and passenger service, an airline may reap significant economies of scope as it begins flying over many routes.


44 Brief for Appellant United States of America.
Because the predation episode occurred in the initial phase of entry, this also indicates that American was trying to damage the LCC’s initial performance. American did not wait until the LCCs were operating many routes out of DFW to act. As soon as the LCCs announced they would increase their activities out of DFW by operating more destinations, American added money-losing capacity on the few markets when these LCCs operated. Such actions would necessarily harm the initial performances of the LCCs, and if successful, cast doubts on the LCCs’ chances of success at DFW airport.

American’s strategy was successfully in gaining back many passengers, limiting the source of revenues of LCCs. There is also evidence that American monitored closely the performance of its prey, calculating their load factors and break-even point. Such activity indicates that American was trying to gauge whether its aggressive strategy was successfully triggering financial losses for its rivals.

It is also clear that American had sufficient internal funds to sustain a temporary price war against these LCCs on a few markets. The 10-K SEC filings during the years of the alleged predation reveal that AMR, the parent company, had tens of millions of dollars available. In addition, had it been necessary, the scope of American’s operation and its credentials with the financial markets at the time would facilitate the creation of new lines of credit.

Finally, it appears that American had opted for a different competitive strategy, depending on which rival it faces. Delta has been an active player out of DFW, and other network carriers fly regularly from their respective hub to DFW. American strategy against other large network carriers can be contrasted with the strategy it adopted against the three LCCs. In addition, and more telling was American strategy with respect to SouthWest, a large LCC that operate out of Love Field, another airport in the Dallas-Forth Worth urban area. DOJ contrasted American’s accommodating strategy when facing SouthWest, a more established LCC with substantially larger operation and greater financial backing than the three LCCs at issue in this suit.

Shortly after American started the alleged predatory episode, the three LCCs eventually exited the route and left DFW altogether. Two of them, Sun Jet and Western Pacific, filed for bankruptcy shortly thereafter, and Vanguard, the third one relocated in Kansas City.

Building a Reputation for toughness?

American operated flights on hundreds of market out of DFW, and the LCCs entered only a handful of them. American could use these few markets where it faced these newcomers to demonstrate its “toughness” and start building a reputation of an aggressive incumbent sending a clear signal to any LCC wishing to enter a route at DFW. Because the number of markets to protect is large, such strategy might be very effective when the profit sacrifice takes place on a handful of markets. In fact, this strategy against financially weak entrants that relied on external funding reinforced the reputation that American would be particularly aggressive when facing this particular type of entry. The strategy was made credible as American repeatedly attacked the weaker LCCs that tried to set foot at DFW during these two years. The streak of predatory episodes led DOJ to file suit against American. American was sending a clear signal to every potential LCC entrant.

DOJ alleged that American newly acquired reputation of tough competitor deterred other LCCs to enter routes to/from DFW. For example, the District Court reports that JetBlue, a LCC based in New York City, “believes that its proposed service of three round trips a day between JFK and DFW would be financially viable so long as the competitive reaction was only fare matching by the incumbents and did not include adding flights”. Potential entrants were clearly watching the event unraveling at DFW and few have since attempted to enter massively at DFW. The District Court noted that since 1995 several LCCs have entered DFW, but it does not appear that any one of them is serving more than two routes out of DFW. As of today the presence of LCC in DFW seem to be restricted to a few routes.
A financial predatory strategy coupled with a reputation effect has the benefit of raising barriers to entry. This, in turn, contributes to facilitate the recoupment of the initial profit sacrifice. And in this case, the recoupment could allegedly occurred on other markets that those where the predatory actions took place.

5.2 Evidence of likely recoupment

Because the first prong of Brooke Group was not met (pricing below an appropriate measure of cost) the Court of Appeals did not examine whether there existed a dangerous probability of recoupment. However, the district court ruled that recoupment was unlikely. In short, the district court argued that because LCC had actually entered the route, there is no "structural barriers" to entry, and therefore American cannot sustain supra-competitive price on these routes. It follows that the pre-entry prices were not supra-competitive either. The district court also rejected the possibility of recoupment on other markets and focused solely on recoupment in markets were the alleged predation had taken place.

According to DOJ the existence of barriers to entry and the ability of American to price above competitive prices is demonstrated by the fact that American’s price were competitive when facing SouthWest or other LCCs, but higher and indicative of earning supra-competitive earnings when not facing such competition. Therefore, this suggests evidence that American would be able to raise prices to monopoly levels once rivals have exited the route. In addition, the Braniff Airlines experience also shows that American can raise prices after rivals exit the market. The District Court reports that when Braniff Airline moved its operation from DFW to Kansas City in 1988, “American’s prices increased an average of 13% on the routes where it had formerly competed with Braniff”.

DFW is one of the hubs of American where in 2000 it held a market share of above 70% of all passengers boarding a plane. As the ValueJet experience revealed, should an LCC establish a hub at DFW, this could have devastating consequences on American’s revenue. Recoupment therefore should also include other routes in which American holds a monopoly position. American money-losing capacity addition on a few routes is a small investment to protect its monopoly rents on many other markets.

DOJ claimed that the LCCs have in general much lower operating costs than major hub carriers\textsuperscript{45}. One obvious cost advantage that LCCs have over traditional US carriers is the absence of stranding labour contracts. The threat posed by the entry of LCC to the current and future profits of American was clear. The elimination of such threat would justify sacrificing profit to preserve American monopoly profit on many routes out of DFW. And the predatory strategy would further raise barriers to entry against cash-strapped LCCs that will think twice not only before entering a route out of DFW but also before adopting DFW as a base of operation.

5.3 Evidence of profit sacrifice

The courts review of this case focused largely around the determination of whether American had sacrificed profits in the short-run. Ensuing comments triggered by the case provided ample discussion on what is the relevant method to establish profit sacrifice.

5.3.1 Using price and cost data

DOJ offered four tests that purport to demonstrate such sacrifice. These tests are in the words of DOJ as follows:

\textsuperscript{45} See United States of America v. AMR Corporation et al. District Court of Kansas.
“Test 1: Whether incremental cost exceeded incremental revenue
Test 2: Whether long-run (18 month) AVC exceeded price
Test 3: Whether price was below American’s 18-month cost measure (persistent negative profitability); and
Test 4: Whether incremental (average avoidable) cost exceeded price.”46

The District Court recognized that the four tests could be split into two distinct categories. Test 1 and 4 appear conceptually very similar. They check whether the incremental revenues generated by American’s capacity addition were below the incremental cost of that capacity expansion. Test 2 compares price with LRAVC, whereas test 3 does exactly the same thing for a period greater than 12 months.

Based on the public record of the case, it is worth reviewing how DOJ implemented these various tests. Each test was based on the same costs and revenues included in AAIMSPAN, American’s internal decisional-accounting system that is only used for decision-making but not for financial reporting. One important measure generated by this system, FAUDNC, serves primarily to establish the relative performance of American on the routes where it operates a service. FAUDNC is a fully-allocated earnings and cost measure reflecting revenues minus all costs. In fact, FAUDNC captured between 97% and 99% of American’s total costs, including variable expenses, aircraft ownership, fixed overhead, interest, equity and income taxes. FAUDNC was constructed to also capture revenues generated by connecting passengers but subtract the cost associated with those passengers. DOJ claimed that FAUDNC was a measure of long run variable cost (LRAVC). However, according to the district court some costs included in FAUDNC are neither variable nor avoidable with respect to American’s capacity expansion on any particular route. Therefore, FAUDNC calculates a cost measure that is closer to average total cost, and this helps gauging the long run profitability of a particular route.

VAUDNC is another profitability measure that compares American’s variable earnings with variable expenses as determined in American’s accounting system. This variable computes costs that are deemed variable over an 18-month period. DOJ also proposed a refined measure of VAUDNC, termed VAUDNC-AC, which included the cost of aircraft ownership. DOJ claimed that VAUDNC-AC was a measure of short run average variable costs (SRAVC). The district court considered that aircraft ownership costs were fixed, and therefore disputed this interpretation.

Test 2 and 3 were based on FAUDNC only. Test 2 checks whether FAUDNC became negative following American’s capacity expansion, while test 3 checks whether FAUDNC remains negative for at least one year. As discussed above, the district court argued that FAUDNC included too many fixed or unavoidable costs to be relevant. The court of appeals concurred with the district court maintaining that test 2 and 3 “are simply not proxies for marginal or incremental cost”. Although we do not have enough elements to form an informed opinion on test 2 and 3 it would appear that test 1 and 4 were possibly a better way to address whether American had sacrificed profits in the short-run.

Test 1 was a “before-and-after” comparison using American’s accounting decision system. Because American’s reaction to the entry of LCC occurred in two steps, this enables DOJ to ground its counterfactual with hard data. In a first move, American matched the LCC low fares for some of its flights. In a second move, American increased its capacity while opening more seats to its low fares but did not cut down fare any further. Test 1 examines the change in profitability between these first and second moves using FAUDNC, VAUDNC and VAUDNC-AC. Because profits declined, DOJ claimed that American capacity increase were thus unprofitable. Conceptually DOJ attempted to show that it was more profitable for American not to add capacity once entry of LCCs had already taken place. In principle the profit comparison does not suffer from the fallacy of counting the profit loss resulting from the increased in competition following the entry of LCCs.

Test 4 is slightly different. DOJ utilized the change in VAUDNC-AC between the two moves to determine the incremental cost of the capacity addition. DOJ claimed that this was the average

46 Reply Brief for Appellant United States of America.
avoidable cost of the increment of capacity. This cost measure was then compared with the average fare from incremental local passengers.

Although the U.S. Court of Appeals 10th circuit upheld the summary judgment, deeming that “all four proxies are invalid as a matter of law fatally flawed in their application, and fundamentally unreliable”47, we discuss the reasons of the rejection of test 1 and 4, and conceptually depart from some of the court’s conclusion.

The District Court retained that the only test for profit sacrifice is the comparison of price with average variable cost. This position is similar to the part of the AKZO test that is based on variable cost. Because DOJ did not show that prices (average revenues) were below such measure of cost, the district court rejected the predation claim in summary judgment. The Court of Appeals, however, considered that “sole reliance on AVC as the appropriate measure of cost may obscure the nature of a particular predatory scheme and, thus, contrary to what is suggested by the district court we do not favor AVC to the exclusion of other proxies for marginal cost”48.

The district court also labeled tests 1 and 4 as a short-run profit maximization test. Arguably, it would be elusive to determine whether the price charged by American was below its profit-maximizing level. The Court of Appeal followed the reasoning of the district court and rejected test 1 because it was just “looking to whether profits on the route as a whole decline after capacity was added, not to whether the challenged capacity additions were done below cost”49, and this amounted to a profit maximization test. In general, we consider that a short-run profit maximization test is too speculative to be operational. However, we wonder whether conceptually test 1 is really such a test. As we argue in section 4.3 we accept compelling evidence showing that the predator has clearly foregone profits in the short-run. If it can be shown that in the presence of competing LCCs not adding capacity was more profitable, this is evidence that American had foregone profits, and it appears that was what DOJ attempted to demonstrate.

Alternatively, the Court of Appeals considered that test 4 did not suffer from such a flaw, and appeared to endorse the logic of such test as in practice it entailed comparing “the average revenues from incremental passengers who traveled after the capacity addition with the average avoidable cost of capacity addition”50. However, the court rejected test 4 because it contained “arbitrarily allocated variable costs”, and therefore it did not measure properly the incremental cost of American’s capacity expansion. This last criticism illustrates how difficult it might be to identify precisely the cost of the alleged predatory activities.

However, as argued by DOJ in its appellant brief, these two tests determine whether American’s capacity expansion was a profitable strategy, not even that there were alternative conducts that were more profitable. In other words, DOJ only attempted to show that American’s strategy of capacity expansion was losing money, and therefore did not make any business sense but for the exclusion of its rivals.

### 5.3.2 Other economic evidence

Arguably, test 1 was rejected because according to the courts it only showed a decline in profit. When arguing over such a rejection the U.S. courts indicate that it would not consider predatory any aggressive reaction that remains profitable. First, if there is sufficient information and data to show that incremental revenues are below incremental cost, this is the better proxy of showing that marginal revenues is below marginal cost. However, revenues and cost measurement are inherently difficult. Had there been an obvious alternative course of action that is more profitable, there would be evidence that

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47 United States of America v. AMR Corp. U.S. Court 10th Circuit.
48 Ibid.
49 Ibid.
50 Ibid.
American had sacrificed profit. Such evidence tends to be more exploratory, yet easier to implement, than actually showing that incremental revenues were below incremental costs.

In the present case, it would appear that such evidence was clearly available. The first evidence available was American’s reaction to various type of entry. It appeared that American was more aggressive when on routes entered by Vanguard, Western Pacific and Sun jet than that with SouthWest, a well-established LCC. In fact, DOJ claimed that it demonstrated that “American’s capacity changes were systematically profitable in most markets, including markets where American competes with Southwest, they were systematically unprofitable in LCC markets”51.

American took other actions likely foregoing short-run profits. For example, the fact that American increased its capacity far beyond the increase in passenger demand provide compelling evidence that a smaller capacity increase would have been more profitable. It is reported that there were three empty seats for every additional local passenger that American attracted, hardly a healthy business strategy in the short run52. In addition, Americans re-entered routes that it had deemed unprofitable prior to the entry of LCCs. In June 1994, American had abandoned its scheduled air transport service on the route DFW-Long Beach. At the same time, Sun Jet started operating a non-stop service on the same route. When it became clear that Sun Jet’s strategy presented a clear opportunity to establish a DFW hub, American re-entered the route in December 199553. Why would DFW-LGB become a profitable route once Sun Jet operates whereas it was not before when American did not face any rival?

Before Vanguard entered the route DFW-Wichita, American had decided to switch its jet service to propeller that it deemed more profitable. When it became clear that Vanguard’s strategy would lead to the establishment of a mini-hub at DWF, American decided to re-introduce jet services, increasing capacity by 35%, although its turboprop service was profitable. It is difficult to square how jet service deemed unprofitable before the entry of Vanguard, become a more profitable strategy when American faces more competition. On DFW-Colorado Spring, American decided to increase capacity by notably substituting three aircrafts with the larger Boeing 757s. It had already increased capacity by 43% by replacing its seven F-100 flights per day with eight MD-80s. In the words of the district court, “it is unusual that American used 757 aircraft on DFW-COS”54. Overall, these elements are probative and suggest that American had chosen a strategy that was foregoing profits in the short-run.

5.3.3 The dispute over costs

DOJ used VAUDNC-AC as a proxy for short-run average variable cost. Unlike DOJ, the District Court considered that aircraft ownership costs are fixed. Although we would tend to agree with DOJ that aircraft ownership costs are certainly variable over the short run, after all an aircraft can be leased, if anything this exemplifies how difficult it is to agree on what is variable and fixed cost in this type of cases.

DOJ argued that the relevant cost measure is incremental cost, while the District court maintained that the marginal cost of serving an additional passenger is very close to AVC. It is certainly true that the additional cost of carrying an additional passenger on the same plane is not very different from the average variable cost of operating that plane. But the predatory allegation is that American embarked in money-losing capacity addition. Therefore, the cost of adding capacity, that is, either adding flights or switching to larger aircrafts can be quite different from either market-wide AVC or flight AVC. As DOJ stated “the cost of adding 10 passengers on an existing flight is (not) the same as its cost of adding a

51 Reply Brief for Appellant United States of America.
52 Reply Brief for Appellant United States of America.
53 United States of America vs. AMR Corp. United States District Court for the District of Kansas.
54 Ibid.
new flight to carry those same 10 passengers". In fact adding 10 passengers to an existing flight will contribute additional revenues to cover the operating of that flight, which is the not the same as adding a new flight to carry 10 additional passengers.

Because the load factor of the added capacity was extremely low, 3 empty seats for every additional local passenger, the incremental cost must be increasing. Indeed, the overall load factor must decline as American operated planes with more available seats than before. As a result, the incremental cost per passenger as measured over all incremental passengers must be greater than the average variable cost over the entire route. Therefore, as DOJ argued using AVC may actually mask the predatory action of American. As Edlin and Farrell (2002) correctly point out, if the load factor decline with the capacity expansion, the unit cost of carrying a passenger has increased. In fact, American strategy would appear to run contrary to yield management principle that aim at filling up the plane, and only operate flights that have a load factor not below certain level, usually the break-even point.

In conclusion, although the U.S. Court of Appeals dismissed DOJ appeal because of the inappropriate cost measure utilized by DOJ expert to show profit sacrifice, the case illustrates how our proposed method could be implemented. It must be clear that the level of detail and evidence ought to be much higher than what has been musterded in this example to consider even raising any objections.

55 Brief for Appellant of the United States of America
56 See Edlin and Farrell (2002) for a numerical example.
6 Conclusion

In the past, the Commission has used a simple price-cost test, complemented in part by considerations of intent. The language of the European Court of Justice suggests that neither recoupment nor business justification play a significant role. We fear that this approach is likely to result in significant policy errors - both false positives and false negatives.

A rigid price-cost test that establishes a presumption of illegality when prices are below costs is likely to lead to many false positives, proverbially chilling pro-competitive behavior. It ignores pro-competitive justifications for below cost pricing and is extremely hazardous to implement in practice, both for competition authorities and for companies. A firm manager may have to decide very quickly on a day-to-day basis whether the company can legally cut a price, and if so, by how much. Often there is not enough time to complete an accounting study to check whether under some cost allocation methodology, average variable costs will be above prices. There is not enough time to do a massive file search to see whether there are bloodthirsty, sentiments expressed somewhere in internal memos and meeting minutes. Indeed, intent evidence is unlikely to lead to a consistent policy regarding predatory pricing. The current legal approach to predation lessens legal certainty.

In this paper, we advance a way to adapt the legal rules to reflect modern economic thinking on predation. We propose a three-step structured rule of reason to establish a presumption that the observed practice is predatory:

(i) the sacrifice of short-run profits (actual sacrifice)
(ii) the negative impact on rival profitability which may induce a prey to exit, reduce its scale or stay out of the ‘sacrifice’ market or closely related markets (likely exclusion)
(iii) the ability to recoup the initial profit sacrifice by exercising increased market power after the predatory phase (likely recoupment)

To show likely exclusion the Commission can rely on empirical elements derived from economic theories of rational predation. By showing rigorously that some predation scheme can possibly be rational, the analysis draws attention to attributes of the predation process that can make predation profitable and inherently more plausible.

To show likely recoupment a competition agency must assess the ability of the alleged predator to exercise increased market power after rivals are excluded. Three elements are particularly important. First, the likelihood that new entry will take up the place of the exit or marginalized prey. Second the possibility of re-entry. Third, an assessment of how significant a competitive constraint was the prey imposing on the predator.

To show actual sacrifice we propose two alternatives. First, if sufficient data is available, determine whether the incremental costs of the alleged predatory practice are above incremental revenues. Second, if there exists compelling evidence regarding exclusion and recoupment is compelling it may be sufficient to determine whether there exists a more profitable course of action in the absence of exclusion. In some instances traditional price-costs tests may be prove useful in the assessment of actual profit sacrifice, but only insofar they provide an indication of actual sacrifice.

Of course, the defendant may successfully rebut the Commission’s findings regarding exclusion, recoupment and sacrifice. Further, seemingly, predatory behavior can, in some cases, enhance efficiency and increase consumer welfare. Even rational predation may not be abusive if the defendant can show that the initial profit sacrifice leads to market expanding efficiencies. Such efficiencies must fully offset the incentive to raise prices resulting from the exercise of increased market power after rivals are excluded.
We believe a three-step structured rule reason is superior in all counts to the AKZO-based approach:

First, it is easier to administer. Profit sacrifice can be proven even without a complex and controversial analysis of average costs and prices and without entering into a futile and never-ending dispute regarding the relevant cost benchmark.

Second, the proposed approach reduces false negatives, in particular in cases of non-price predation. A comparison of prices and costs can be seriously misleading when firms compete primarily in dimensions other than price. In any event, it is always preferable to concentrate on establishing whether predation would be rational in the given circumstances.

Third, it reduces false positives by placing the focus on proving that a rational predatory strategy exists and that the predator has acted pursuant to that strategy. There is no predation if conduct is not rational. It may not be, either because it cannot credibly lead to exclusion or entry deterrence, or because some competition constraints will remain making the prospect of recoupment unrealistic. Over-enforcement can chill a large firm’s incentives to grow and innovate and it deters its incentives to pass on to consumers the benefits of past investments. The risk of over-enforcement is further reduced by explicitly allowing the alleged predator to justify aggressive conduct in the market even if, despite its exclusionary effects it also leads to increased efficiency to the ultimate benefit of consumers.
7 References


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