

The University of Chicago Law Review



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*Are Predatory Commitments Credible?: Who Should
the Courts Believe?* John R. Lott, Jr.

University of Chicago Press, 1999. Pp x, 173.

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REVIEWS

Are Public Enterprises the Only Credible Predators?

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Are Predatory Commitments Credible?: Who Should the Courts Believe? John R. Lott, Jr. University of Chicago Press, 1999. Pp x, 173.

No antitrust lawyer, industrial organization economist, or regulator should fail to read John Lott's book, *Are Predatory Commitments Credible?: Who Should the Courts Believe?* It is a provocative and significant contribution to the antitrust literature. As the book's subtitle suggests, the work is intended to shape antitrust law in the most practical sense by influencing the decisions that courts render in predation cases. Lott disputes economists who have employed game theory over the past two decades to lend plausibility to the assertion that predation is a serious concern. He endeavors to rebut them both theoretically and empirically. In the process, he produces a provocative hypothesis: while predation by private enterprises is implausible, predation by public enterprises is not.

There is much to applaud in Lott's book, but it is not flawless. A recurring limitation is that Lott's creative empirical tests yield results that can support interpretations other than the ones that Lott offers. We find Lott's book to be more successful in pointing out the likelihood of predatory pricing by public enterprises than in proving that predatory pricing by private enterprises does not occur. Moreover,

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with respect to predation by public enterprises, Lott does not develop the economic and legal implications of his thesis in detail. Some of the relevant analysis may exceed the scope of Lott's concise book, but additional analysis along some of the dimensions described below would have strengthened Lott's important insights. Despite these limitations, *Are Predatory Commitments Credible?* advances significantly the legal and economic understanding of predatory pricing.

In Part I of this Review, we critique Lott's theoretical and empirical attempts to show that predatory pricing by private firms is implausible. Our discussion covers three topics. First, we review the theoretical arguments regarding the plausibility of predation by private firms. Second, we critique Lott's empirical research on the credibility of predatory commitments by private firms. Lott's research tests the hypothesis that predatory firms should adopt different employment and management compensation policies from those adopted by nonpredatory firms. Third, we assess Lott's theoretical analysis of the effects of allowing would-be victims of predation to benefit directly from their privileged knowledge of a predator's intended activities, as, for example, when the victim short sells the stock of the predator.¹ Such short selling can enable the victim to gain financially from the sacrifice in profit that the predator incurs when it predated, and may thereby encourage the victim to persist in its struggle against the predator.

A consistent theme emerges in these sections. Lott's observations are insightful and provocative. However, because he does not model the phenomena of interest carefully in each case, it is often difficult to infer the exact merits of Lott's arguments and how broadly his insights apply. Furthermore, although Lott's empirical work is creative and suggestive, it is not definitive.

In Part II, we assess Lott's theoretical and empirical analyses of predatory pricing by public enterprises. We first emphasize the practical importance of these analyses, both in the United States and abroad where state-owned enterprises are prevalent. Then, we examine Lott's attempt to test empirically whether public enterprises have a greater propensity to undertake predatory pricing than private firms. Again, we find Lott's empirical findings provocative but not definitive.

In Part III, we present, as a proposed research agenda for scholars in law and economics, important unanswered questions that extend Lott's research on predatory pricing by public enterprises. The relevant legal questions encompass such diverse issues as the proper scope of antitrust law, sovereign immunity, and *Chevron* deference² for

¹ A short sale is the sale of a security that the investor has borrowed rather than owns. See Stephen A. Ross, Randolph W. Westerfield, and Jeffrey Jaffe, *Corporate Finance* 866 (Irwin McGraw-Hill 5th ed 1999).

² *Chevron USA, Inc v Natural Resources Defense Council, Inc*, 467 US 837, 842-45 (1984)

regulatory decisions by a government enterprise regarding the scope of its own privileges and immunities from competition. In addition, we explain how Lott's analyses can be formalized and extended to analyze the likely incidence of predatory pricing by public enterprises and the exact patterns in which it is likely to appear. We also ask what policies might be pursued to limit undesirable predation by public enterprises, and discuss some drawbacks to standard legal and regulatory policies.

I. PREDATION BY PRIVATE FIRMS

A central question in antitrust jurisprudence and scholarship is whether, as a theoretical matter, predatory pricing is a rational strategy for a firm to undertake. A related question is whether, as an empirical matter, predatory pricing ever actually occurs.³ Lott argues on both theoretical and empirical grounds that private firms cannot credibly engage in successful predatory pricing.⁴

Curiously, however, Lott never provides a clear definition of predatory pricing; he only hints at a definition halfway through *Are Predatory Commitments Credible?* (p 64). Even then, Lott does not provide the Supreme Court's own articulation of the test for predatory pricing, which would seem pertinent to a book that endeavors to advise courts on whom they should believe about predation. In *Car-*

(holding that, when interpreting a statute that an agency administers and the statute is silent or ambiguous with respect to the issue in question, a court must defer to the agency's construction of the statute if it is reasonable).

³ For an introduction to the debate, see Paul L. Joskow and Alvin K. Klevorick, *A Framework for Analyzing Predatory Pricing Policy*, 89 Yale L J 213 (1979) (proposing a two-tier test courts could use to evaluate predation claims); Oliver E. Williamson, *Predatory Pricing: A Strategic and Welfare Analysis*, 87 Yale L J 284 (1977) (arguing that, when firm behavior is considered over time, predatory pricing is a viable strategy because predatory firms will be able to establish a credible predatory commitment, deter potential entrants, and recoup losses); Phillip E. Areeda and Donald F. Turner, *Predatory Pricing and Related Practices Under Section 2 of the Sherman Act*, 88 Harv L Rev 697 (1975) (concluding (1) that sales below reasonably anticipated short-run marginal costs or average variable costs should be deemed predatory pricing, and (2) that predatory pricing is unlikely to succeed or be tried because a predatory firm will not be able to recoup its losses in most cases). See also Phillip E. Areeda and Herbert Hovenkamp, *Antitrust Law: 1999 Supplement* 224-30 (Aspen 1999) (reporting recent judicial discussion of predatory pricing).

⁴ It is worth noting that predation may take many forms other than predatory pricing, such as misleading advertising about a competitor's product, cutting off supply of an essential input, designing interfaces for complementary products in a way that produces incompatibility for a rival, or initiating excessive regulatory hearings and/or lawsuits. If these forms of nonprice predation constitute more effective means of eliminating competition than predatory pricing, as Judge Robert Bork and others have argued, then we might not expect to see much predatory pricing in practice. For discussion of these nonprice methods of predation, see Robert H. Bork, *The Antitrust Paradox: A Policy at War with Itself* 347-64 (Free Press rev ed 1993); William J. Baumol and Janusz A. Ordover, *Use of Antitrust to Subvert Competition*, 28 J L & Econ 247 (1985). This issue deserves more than the limited attention that Lott affords it.

gill, Inc v Monfort of Colorado, Inc,⁵ in 1986, the Supreme Court defined predatory pricing as “pricing below an appropriate measure of cost for the purpose of eliminating competitors in the short run and reducing competition in the long run.”⁶ Seven years later, the Court clarified in *Brooke Group Ltd v Brown & Williamson Tobacco Corp*⁷ that a claim of predatory pricing requires the plaintiff to prove that prices “are below an appropriate measure of its rival’s cost” and that the alleged predator has “a reasonable prospect, or, under § 2 of the Sherman Act, a dangerous probability [] of recouping its investment in below-cost prices.”⁸ The Court, however, has never supplied a specific definition of “cost.”⁹ Obviously, the answer to Lott’s question of whether “predatory pricing” is credible will depend significantly on what measure of cost one uses to define the term. It is unfortunate, therefore, that Lott does not address this potential source of confusion at the very beginning of his book.

A. The Credibility of Predatory Commitments by Private Firms

Chapter 1 of *Are Predatory Commitments Credible?* provides an expeditious summary of the literature on predatory pricing. Lawyers and economists in the Chicago School of antitrust analysis have argued that the predator’s difficulty in recouping the losses that result from pricing below some appropriate measure of marginal (or average incremental) cost makes predatory pricing an inherently inefficacious and unattractive strategy. Even if predatory pricing could force competing firms to exit, in any market that does not require significant sunk costs for entry, the predator cannot prevent entry during the post-predation phase, when the predator seeks to raise its price to supracompetitive levels.¹⁰ That result may hold even in the presence of sunk costs if the firm exiting the market can sell its capacity to a subsequent entrant.¹¹ Thus, predatory pricing would seem to be irrational

⁵ 479 US 104 (1986).

⁶ *Id* at 117.

⁷ 509 US 209 (1993).

⁸ *Id* at 222, 224.

⁹ *Id* at 222–23 & n 1; *Cargill*, 479 US at 117–18 n 12.

¹⁰ See Bork, *The Antitrust Paradox* at 144–59 (cited in note 4) (reviewing literature). For applications of this idea to antitrust law, see Yale Brozen, *Concentration, Mergers, and Public Policy* 162–64, 386–92 (Macmillan 1982) (arguing that the Chicago view has been persuasive among scholars); Frank H. Easterbrook, *Predatory Strategies and Counterstrategies*, 48 U Chi L Rev 263, 263–64 (1981) (concluding that courts and the law should not take predation charges seriously); Richard A. Posner, *Antitrust Law: An Economic Perspective* 184–96 (Chicago 1976) (arguing that predatory strategies can at best delay entry); Lester Telser, *Cutthroat Competition and the Long Purse*, 9 J L & Econ 259 (1966) (arguing that firms can more easily pursue monopolization by merger and acquisition than by predation).

¹¹ See Paul W. MacAvoy, *The Failure of Antitrust and Regulation to Establish Competition in Long-Distance Telephone Services* 190 (MIT and AEI 1996) (arguing that “predatory pricing in

as a theoretical matter not only in markets with small sunk costs, but also in markets with large sunk costs associated with investments in durable capacity that are not highly firm-specific. The Chicagoans further predict that competitors will understand the weakness in a predator's position and adopt their own defensive strategies predicated on the belief that the predator could not credibly commit itself to a path of sustained losses from uncompensatory pricing.¹² Much empirical work supports this view. Indeed, even Phillip Areeda and Donald Turner, both professors at Harvard rather than Chicago, observed in their famous *Harvard Law Review* article of 1975 that "proven cases of predatory pricing have been extremely rare."¹³

This skepticism toward predatory pricing is not shared by all economists.¹⁴ Economists have employed game-theoretic models to show that pricing below cost may be rational because of signaling effects and that the sequential bankruptcies of multiple competitors, which the Chicago School powerfully argued are neither plausible nor observed, are unnecessary for successful predatory intimidation.¹⁵ Whatever the merits of their arguments, however, the game theorists have, to date, failed to convince the courts. In 1993, for example, Alvin Klevorick surveyed the game-theoretic economic literature on predation and found that courts had yet to consider it.¹⁶ The current body of predatory pricing jurisprudence, epitomized by the Supreme Court's decisions in *Matsushita Electric Industries Co v Zenith Radio Corp*¹⁷

the interLATA market could not produce a monopoly," because "[e]ven if a Bell operating company could bankrupt one or more of the three major interexchange carriers, that carrier's fiber optic capacity would remain intact for another to purchase"); Daniel F. Spulber and J. Gregory Sidak, *Deregulatory Takings and the Regulatory Contract: The Competitive Transformation of Network Industries in the United States 92-94* (Cambridge 1997) (reviewing evidence that this is true of the telecommunications industry).

¹² See Easterbrook, 48 U Chi L Rev at 285-88, 293-94 (cited in note 10) (noting, for example, that entrants may sign long-term contracts with customers making them invulnerable to predators' price cuts).

¹³ Areeda and Turner, 88 Harv L Rev at 718 (cited in note 3).

¹⁴ Indeed, even the skepticism among Chicago-oriented scholars should not be equated with a dogmatic belief among them that successful predation never occurs. See, for example, Dennis W. Carlton and Michael Waldman, *The Strategic Use of Tying to Preserve and Create Market Power in Evolving Industries*, Working Paper No 145, George J. Stigler Center for the Study of the Economy and the State, University of Chicago (July 1999) (arguing that monopolists may be able to use product tying and foreclosure to deter entry of efficient firms and help the monopolist recoup losses from predatory pricing); Thomas W. Hazlett, *Predation in Local Cable TV Markets*, 40 Antitrust Bull 609 (1995) (presenting a case study of successful predation).

¹⁵ By setting low prices, a firm may be able to signal to its imperfectly informed rivals that its costs are low. By convincing its rivals that they face a particularly formidable competitor, the firm can induce its rivals to exit the industry. For a review and analysis of the relevant literature, see, for example, Jean Tirole, *The Theory of Industrial Organization* 361 (MIT 1989).

¹⁶ Alvin K. Klevorick, *The Current State of the Law and Economics of Predatory Pricing*, 83 Am Econ Rev Papers & Proc 162 (1993).

¹⁷ 475 US 574, 589 (1986) ("[P]redatory schemes are rarely tried and even more rarely successful.").

and *Brooke*,¹⁸ embraces the skepticism of the Chicago School. Predatory pricing is, in the Court's view, rarely attempted and even more rarely successful.

Lott is sympathetic to that conclusion. He observes, correctly, that game-theoretic models of predation can explain almost any phenomenon (pp 2-6). This fact may constitute a legitimate drawback to such models. Their strength, however, is that they force the researcher to make explicit all assumptions that are being made about the environment in question. A reader can then assess readily whether the maintained assumptions are appropriate for the situation under consideration. Game-theoretic models also provide a convenient vehicle for proving carefully all assertions that are made. By failing to present his arguments using fully specified game-theoretic models, Lott unfortunately fails to make his own assumptions clear. Consequently, *Are Predatory Commitments Credible?* often leaves the reader to try to surmise the conditions under which Lott's assertions are valid. Several examples of this problem are discussed below.

B. Lott's Empirical Investigation of the Credibility of Predatory Commitments by Private Firms

Lott's attempt to test predation theories empirically should be applauded for its creativity and originality. Lott hypothesizes that a firm's predatory commitments will be credible only if its managers are given incentives "to expand output at the expense of accounting profits" (p 19) and if they cannot easily be removed by shareholders during the predatory period. Lott then surveys the experiences of eighty-five firms sued for predation to see whether they had decoupled manager compensation from short-term profit or entrenched their managers in some fashion.¹⁹ He finds that they did not. Rather, "[m]anagers of firms accused of predation were rewarded *more* for increasing short-term profits in predation years than were other managers" (p 43). Nor were such managers more entrenched (p 56).

The primary weakness in Lott's approach is that he assumes predatory commitments must take the form of managerial incentives without considering alternative forms. Much of the game-theoretic literature on predation of the 1980s and 1990s built on the work of Stanford economists Paul Milgrom and John Roberts.²⁰ Accordingly, Lott

¹⁸ 509 US at 225-26 (affirming the test applied in *Matsushita*).

¹⁹ Though it is unlikely that all these firms were guilty of predatory acts, Lott assumes that they were more likely to be guilty than most firms. One would therefore expect to find that their management compensation and job security differed systematically from most firms if the game theoretic model is valid.

²⁰ Paul Milgrom and John Roberts, *Predation, Reputation and Entry Deterrence*, 27 J Econ Theory 280 (1982).

addresses the Milgrom-Roberts model. In particular, Lott interprets the model to require that potential competitors believe that the predator is not interested in maximizing profit. Lott's interpretation of that model, however, may be too literal and may overlook other possible interpretations (pp 18-27).²¹ Entrants may simply be uncertain about the predator's cost function.²²

Lott does not present a formal model to justify his assertion that predatory firms would be expected to compensate managers differently from the manner in which nonpredatory firms do. Without the formal model, it is difficult to test whether the assertion is true. Lott hypothesizes that the shareholders of predatory firms that support a predatory strategy would be tolerant of managers who sacrificed profit in the short term and would punish managers if competitive entry were to occur (contrary to those managers' efforts to establish a reputation for toughness) (p 20). But it is not clear why these shareholders should necessarily want to fire a manager when entry occurs. Firing the manager is optimal when evidence of incompetence or shirking arises. Competitive entry is not necessarily a sign of either.²³ Incentive structures that pay managers more as profits fall might well be interpreted by the courts as evidence of predatory pricing. This fact alone may preclude the use of such incentive structures, even if predation is taking place. Moreover, Lott ignores the role of the labor market in affecting managers' incentives. Even if a manager is paid a fixed wage, he may choose to act as a vicious predator if doing so will make him more highly valued by other potential employers who seek a manager to conduct predatory pricing.

As a general proposition empirical work is seldom definitive, and for a variety of reasons, that is certainly the case here, as Lott recognizes:

[O]ne must be careful in interpreting the evidence provided later . . . showing that firms accused of predation neither provided accused predatory managers with additional protection from removal nor provided them with compensation that encourages predatory behavior. Two interpretations are possible: either that

²¹ Lott's own discussion appears to concede that his focus on the early Milgrom-Roberts reputation model may not be entirely appropriate (p 27). That concession, however, does not seem to affect the design of his empirical tests.

²² See note 15.

²³ More generally, observed performance is seldom a perfect measure of unobserved behavior or ability. Consequently, the ideal relationship between performance and compensation is difficult to specify in general. See, for example, Bengt Holmstrom, *Moral Hazard and Observability*, 10 *Bell J Econ* 74 (1989). Furthermore, if entry always led to dismissal of the manager, the entrant might be particularly inclined to enter when it knows the manager is an effective and ruthless predator. Under such circumstances, a policy of always firing the manager when entry occurs could be counterproductive.

firms in my sample were, contrary to the charges, not engaging in predation; or, that if predation was occurring, it cannot be explained by theories which rely on firms hiring nonprofit maximizing managers (p 25).

Lott's caution is well advised and commendable.

In addition to having these general conceptual difficulties, Lott's empirical analysis may be constrained in its explanatory power by several more technical concerns that we now address.

1. Empirical analysis of predation and managerial compensation.

If successful predatory pricing requires a firm to sacrifice profit, reasons Lott, then CEO compensation should be inversely related to profit in firms that are accused of predatory pricing (p 40). Contrary to that hypothesis, Lott stresses the finding that firms accused of predatory pricing tend to link CEO compensation positively to short-term profit *more* than other firms do (p 43). He interprets this pattern as evidence that the accused firms do not reward the CEO for the profit sacrifice that is a prerequisite to predatory pricing. That interpretation, however, is open to debate on several grounds.

First, Lott's (largely unstated) theoretical model appears to equate managers and CEOs. If lower-level managers are the ones who actually carry out predation, then one would want to examine the relationship between alleged predation and the compensation of lower-level managers. Lott concedes this point (p 139 n 23), but notes that data limitations preclude such an analysis.

A second issue concerns the proper measure of managerial compensation. A large literature notes the difficulties in inferring true compensation from available data.²⁴ Available data seldom capture such important elements of compensation as vacation time, retirement benefits, staff support, perquisites, working conditions, travel requirements, scheduling flexibility, and so forth. Lott acknowledges this point (p 39) but (perhaps appropriately) concludes that, since others have proceeded with less than ideal data, he will also. The use of stock options for managerial compensation complicates matters further. It is not clear that "stock options exercised . . . during the previous year" should be included in any measure of compensation (p 31). Exercised options reflect discretionary behavior by the employee, and may not

²⁴ For two recent reviews of the literature, see Joel S. Demski and David E.M. Sappington, *Summarization With Errors: A Perspective on Empirical Investigations of Agency Relationships*, 10 *Mgmt Accounting Research* 21 (1999); Canice Prendergast, *The Provision of Incentives in Firms*, 37 *J Econ Lit* 7 (1999).

be deliberate attempts by the firm to motivate desired actions.²⁵ (Lott, however, indicates in a footnote (p 139 n 19) that the empirical findings do not vary when this component of compensation is omitted.) Furthermore, Lott's 0-1 dummy variable that reflects whether the firm provides options to its CEOs is less than satisfactory. Ideally, one would want a measure of the number of options provided and the value of these options.

Third, managers terminate their employment at firms for many reasons, including personal conflicts, health concerns, family considerations, and alternative employment offers. When Lott regresses measures of managerial turnover at a firm on indicators for whether the firm predated and other variables, he fails to control for all relevant factors that may explain turnover. This may produce omitted variable bias²⁶ rendering unreliable the estimated relationship between managerial turnover and possible predatory activity. Also, greater managerial turnover may be evidence of an industry in which there is an active labor market for CEOs. In such markets, the internal monetary incentives afforded a CEO may have relatively little impact on his performance.

Apart from the preceding considerations, there are at least three reasons why managerial compensation may increase as short-term profit increases in firms that are engaged in predation. First, aggressive, risk-loving managers who may be particularly adept at conducting predatory pricing may be attracted to firms that link pay more closely to performance. Thus, the identified pay structure may serve to attract the desired type of CEO. Second, CEOs direct many different aspects of firms' activities. Although predation might be encouraged by increasing compensation as short-term profit falls, other activities (cost reduction and innovation, for example) may suffer from such a reward structure. It is important to recognize explicitly the multi-task nature of firms.²⁷ Third, firms that seem to be engaged in predation may be under the most pronounced pressure from competitors. If so, it may be particularly critical for these firms to induce their managers to

²⁵ It is conceivable that the number of options exercised could provide relevant information about predatory behavior. Managers at time t , who know the firm will adopt a predatory pricing strategy at time $t+2$, might exercise options at time t and sell at time $t+1$ to avoid the dip at time $t+2$. However, insider trading laws may prevent this strategy and strip the options exercised of their information value.

²⁶ See William H. Greene, *Econometric Analysis* 401-02 (Prentice-Hall 3d ed 1993).

²⁷ See Bengt Holmstrom and Paul Milgrom, *Multi-Task Principal-Agent Analyses: Incentive Contracts, Asset Ownership, and Job Design*, 7 J L, Econ, & Org 24 (1991) (arguing that principal-agent models are of limited use in analyzing firms' compensation policies unless they can account for those firms' multiple goals and developing a model that does account for multiple goals).

rectify immediately the decline in profit that intense competition has caused.

In short, the link between CEO compensation and short-term profit in firms accused of predation is not necessarily evidence of predatory behavior or the lack thereof.

2. Sample size and interpretation.

Lott's cautions regarding the size of his sample are important (p 36). Lott is testing for significant differences between the activities of firms accused of predation and those not so accused. Even if economically meaningful differences are present, they may not manifest themselves as statistically significant, given the small number of firms accused of predation.²⁸

Moreover, Lott's interpretation of the likely effects of his independent variables is not beyond question. Three examples illustrate this point. First, Lott regards the industry-adjusted Tobin's q ²⁹ as a "proxy for management entrenchment" because, "[t]o the extent that poorly managed firms have a low q , then q provides a possible measure of the value created by a takeover" (p 24). However, despite some supporting empirical evidence that Lott curiously does not cite,³⁰ it is not clear that a firm with a high Tobin's q is less vulnerable to takeovers (p 24). A high value of Tobin's q may alternatively signal an unusually attractive opportunity for further enhancements of a firm's operations, and therefore a relatively high likelihood of takeover. An internet company, for example, might have both a high q and a high likelihood of being acquired. Second, Lott suggests that research and development expenditure is also an indicator of management entrenchment because it is "more costly to remove managers who have large specific human capital investments in evaluating research" (p 24). Yet firms that are actively engaged in research and development may also be particularly likely takeover targets (in order to internalize

²⁸ Moreover, models in the literature suggest that only cases in which the guilt of the defendant is assessed incorrectly proceed to trial. The other cases are settled. See Andrew F. Daughety, *Settlement*, in B. Bouckaert and Gerrit De Geest, eds, *Encyclopedia of Law and Economics* part 7 (Edward Elgar 1998), available online at <<http://www.encyclo.findlaw.com/lit/7400art.htm>> (visited Nov 2, 1999) (surveying recent models). The point that Lott raises (p 31) may therefore warrant more consideration than he affords it.

²⁹ Tobin's q is the ratio of a firm's market value to the replacement cost of its assets. See, for example, Ross, Westerfield, and Jaffe, *Corporate Finance* at 37-38 (cited in note 1).

³⁰ Andrei Shleifer and Robert W. Vishny, *Value Maximization and the Acquisition Process*, 2 *J Econ Persp* 7, 11, 12 (1988) (describing studies which found that a firm's Tobin's q score helped predict whether it would be the victim of a hostile takeover). See also Andrei Shleifer and Robert W. Vishny, *Management Entrenchment: The Case of Manager-Specific Investments*, 25 *J Fin Econ* 123, 134-36 (1989) (explaining why managers' efforts to entrench themselves might produce a low Tobin's q in a firm).

the spillovers from innovation, for example). Third, Lott claims that large firms are a proxy for entrenchment because large firms are more difficult to take over (p 24). However, firms may be large because they control particularly valuable resources, an attribute that actually makes them more attractive takeover targets. The actual or announced acquisition of companies the size of Ameritech, GTE, Mobil, Sprint, and Telecom Italia in 1999 gives reason to doubt Lott's hypothesis. As these three examples suggest, not only is Lott's focus on entrenchment questionable (which relates as well to his interpretation of the Milgrom-Roberts model), but so are his proxies for entrenchment.

C. Lott's Analysis of How the Would-Be Victim of Predation Might Benefit from Privileged Information

In Chapter 5, Lott introduces an intriguing argument to the predation debate that merits further thought. He asks whether "potential entrants [can] make money using information on their decision to enter a market with a predatory firm" and whether "these entrants [can] use the predatory firm's commitment to lose money to increase the returns to entry" (p 17). The specific mechanism by which the entrant would exploit this asymmetry of information would be through its short selling of the predator's stock. If an entrant knew that an incumbent firm would engage in predation upon the entrant's entry into an industry, the entrant could sell short the stock of the incumbent. Since, in the short-run, the incumbent's predation will cost it profits, the incumbent's stock price will likely fall. The entrant will then be able to offset its own loss in sales or profits due to the incumbent's predation by gains from having sold short the incumbent's shares. This line of analysis builds on Lott's work with Robert Hansen,³¹ and the two deserve credit for introducing an interesting line of inquiry.

The analysis in Chapter 5, however, illustrates forcefully the more general criticism that Lott does not spell out the details of his formal model carefully (details that elude the reader even after close study of the analysis in Appendix C, which includes confusing typographical errors and/or undefined terms). In particular, the equilibrium concept

³¹ Lott and Hansen's earlier work explained the welfare effects that followed when share purchases linked the financial fortunes of competitors. See Robert G. Hansen and John R. Lott, Jr., *Externalities and Corporate Objectives in a World with Diversified Shareholder/Consumers*, 31 *J Fin & Quantitative Anal* 43 (1996) (suggesting that investors who owned diversified portfolios might disapprove of policies that were profit maximizing but imposed costs on other firms); Robert G. Hansen and John R. Lott, Jr., *Profiting from Induced Changes in Competitors' Market Values: The Case of Entry and Entry Deterrence*, 43 *J Indus Econ* 261 (1995) (proposing a model to examine "how one firm might profit by trading in the securities of other firms whose values are dependent on the first firm's actions").

being employed is not specified.³² Lott defines FC^* to be "the critical cost level that the market assumes the entrant to be using" (p 127). It is not clear, however, who "the market" is, or how it obtains these beliefs. Presumably these beliefs are correct in equilibrium. But how are beliefs affected by out-of-equilibrium actions by the entrant and/or the incumbent? These are the critical issues that lie at the heart of a vast literature on signaling and equilibrium refinements.³³ It is difficult to assess Lott's conclusions when he does not provide a more complete treatment of these issues. For example, in a footnote, Lott states his assumption that "the potential entrant makes a public announcement concerning its plans, and that this announcement is credible" (p 153 n 25). The assumption that any statement by the entrant is credible warrants considerably more justification, and is particularly incongruous given the book's focus on the difficulties associated with making announcements and actions credible.

Despite these shortcomings, Lott's conjectures on predation and short selling are likely to stimulate further productive research. It would be useful, for example, to develop a careful welfare analysis of the short selling of competitors' stock. Short selling by the potential victim of predation may make the victim more aggressive. This can be advantageous in settings where too little entry would arise in the absence of short selling. (But if, as Lott seems to suggest, predatory pricing does not take place, and if nonprice predation also does not occur, then is there ever too little entry in equilibrium?) However, more aggressive entrants can reduce social welfare in settings where there is excessive entry even without short selling. Gregory Mankiw and Michael Whinston suggest that this is often the case because an entrant does not internalize the loss in sales that it imposes on competitors when it enters.³⁴

A complete analysis of the merits of short selling should also include the possibility of buyouts, which Lott's stories suggest may be important in practice. There is some theoretical work on this issue,³⁵

³² That is, no precise definition of an equilibrium is offered. Typically, "an equilibrium is a situation in which each individual agent is doing as well as it can for itself given the array of actions taken by others and given the institutional framework that defines the options of individuals and links their actions." David M. Kreps, *A Course in Microeconomic Theory* 6 (Princeton 1990).

³³ For an overview, see Andreu Mas-Colell, Michael D. Whinston, and Jerry R. Green, *Microeconomic Theory* (Oxford 1995); Drew Fudenberg and Jean Tirole, *Game Theory* 324-29, 446-60 (MIT 1991). For a less technical treatment, see Eric Rasmusen, *Games and Information: An Introduction to Game Theory* (Blackwell 2d ed 1994).

³⁴ N. Gregory Mankiw and Michael D. Whinston, *Free Entry and Social Inefficiency*, 17 *RAND J Econ* 48 (1986).

³⁵ See, for example, Eric Rasmusen, *Entry for Buyout*, 36 *J Indus Econ* 281 (1988) (exploring the possibility that firms may enter an oligopolistic or monopolistic market in hopes of being bought out).

but the work to date has not considered short selling. Although Hansen's and Lott's original work predates related work by other authors, there is some scholarship that deserves mention. For example, the recent work of Jeremy Bulow, Ming Huang, and Paul Klemperer on toehold acquisitions examines takeovers in which one of the bidders already owns a (small) stake in the target firm.³⁶ Because it owns a stake in the target, the acquirer gains when the final acquisition price is high, regardless of the identity of the winning bidder. Consequently, the bidder with the toehold stake bids more aggressively than it would without the toehold stake. Its aggressive bidding induces others to bid more aggressively in equilibrium, leading to a higher acquisition price. Bulow, Huang, and Klemperer note that this effect can be sufficiently strong that the target firm may benefit by voluntarily providing a potential acquirer some shares in the target (at no cost). Although Bulow, Huang, and Klemperer do not consider predatory pricing, some of the basic incentive effects in the two analyses appear to be similar. Lott (or a future researcher) might benefit from adopting some of the methodology of Bulow, Huang, and Klemperer in providing a more detailed investigation of the welfare implications of linking the financial fortunes of competitors.

II. PREDATION BY PUBLIC ENTERPRISES

Until Lott's writings on predation by public enterprises,³⁷ an unstated premise in the debate over predatory pricing had been that predators were privately owned firms seeking to maximize profit. Profit-maximizing firms will undertake predatory pricing only if doing so increases long-term profit. Public enterprises, which typically do not seek to maximize long-term profit, were rarely the subject of research on predatory pricing. Looking past this assumption, Lott pointed out that public enterprises often compete with private firms, and asked whether public enterprises have an incentive to engage in predatory pricing when private firms would not.

The question is of considerable importance. Even in so capitalist an economy as that in the United States, public enterprises account for the production of goods and services valued annually in the hundreds of billions of dollars. Public enterprises operated by, or under the auspices of, the federal government include the U.S. Postal Service, the Tennessee Valley Authority, the Bonneville Power Authority, the Salt River Project, Fannie Mae, Freddie Mac, Amtrak, and UNICOR (Federal Prison Industries). The annual revenues of the U.S. Postal Service

³⁶ Jeremy Bulow, Ming Huang, and Paul Klemperer, *Toeholds and Takeovers*, 107 J Pol Econ 427 (1999).

³⁷ John R. Lott, Jr., *Predation by Public Enterprises*, 43 J Pub Econ 237 (1990).

alone exceed \$60 billion.³⁸ In many cases, these public enterprises may compete with private firms in the supply of some services while enjoying a statutory monopoly over the supply of others, as in the case of the Private Express Statutes, which grant the U.S. Postal Service a monopoly over the delivery of letters.³⁹ Public enterprises often account for even larger portions of economic activity in other countries, and a central element in the process of commercializing or privatizing those enterprises is to remove their statutory privileges and immunities, including protection from competition.⁴⁰

Perhaps because of the global trend toward privatization, the competitive implications of public enterprises are generating increased, widespread attention. In the spring and summer of 1999 alone, for example, the European Commission commenced separate investigations of possibly anticompetitive behavior by Deutsche Post, France Television, and Italy's RAI;⁴¹ a private delivery company in Calgary challenged Canada Post's statutory monopoly as a violation of Alberta's provincial rights under Canadian constitutional principles of federalism;⁴² the British government commenced an investigation of the British Broadcasting Company's offer of free Internet access;⁴³ and the U.S. Postal Service came under fire for adopting regulations requiring customers of private mailbox services such as Mail Boxes Etc. to register their actual addresses with the Postal Service and have their incoming mail addressed "PMB" for private mailbox, lest it be marked "Undeliverable as Addressed" and returned to the sender.⁴⁴

³⁸ United States Postal Service, *Comprehensive Statement on Postal Operations, FY 1998* (1999), available online at <<http://www.usps.gov/history/anrpt98>> (visited Nov 2, 1999). At the state and local level, public enterprises include electrical cooperatives, municipally owned electric companies, roads, bridges, tunnels, bus and rail transit systems, water and sewer systems, waste removal services, hospitals, schools, airports, and ports.

³⁹ 18 USC §§ 1694 et seq (1994 & Supp 1995). See also J. Gregory Sidak and Daniel F. Spulber, *Protecting Competition from the Postal Monopoly* 11-38 (AEI 1996) (analyzing Private Express Statutes).

⁴⁰ For example, Australia subjected its state-owned telephone company, Telstra, to the antitrust laws even before the flotation of the first tranche of the company's privatization. Sidak and Spulber, *Protecting Competition from the Postal Monopoly* at 157-58 (cited in note 39).

⁴¹ William Echikson, *A Trustbuster's Parting Volley*, *Bus Wk* 21 (Aug 9, 1999); *Dominant Mail*, *Economist* 62 (July 24, 1999); Emma Tucker, *Brussels to Probe Post and Broadcasting*, *Fin Times* 2 (July 20, 1999); Emma Tucker and Ralph Atkins, *Deutsche Post Ready to Argue Its Case*, *Fin Times* 2 (July 20, 1999). In February 1999, the Organization for Economic Cooperation and Development ("OECD") held a conference of antitrust enforcers from its member nations to address competition issues in postal services. See *Promoting Competition in Postal Services* (OECD 1999).

⁴² Counterclaim, *Canada Post Corp v Goodfellas Delivery Inc*, Action No 9901-05495 (Ct of Queen's Bench of Alberta, Jud Dist Calgary, filed May 7, 1999). For a treatment of this subject, see J. Gregory Sidak and Daniel F. Spulber, *Monopoly and the Mandate of Canada Post*, 14 *Yale J Reg* 1 (1997) (evaluating the existing position of Canada Post and proposing reforms).

⁴³ *BBC Launches Free Internet Service*, *Wall St J A6* (Sept 3, 1999).

⁴⁴ Michael Brick, *Private Mailbox Services Call New Postal Rules Unfair*, *NY Times C2* (July

A. Incentives for Predation by Public Enterprises

Lott argues that the standard objections to predation theories do not apply to public enterprises because such firms have different incentives than private firms to undertake predation. He cites a number of reasons why that might be so. First, Lott argues that public enterprises benefit from a lack of benchmarking that facilitates monitoring private firms engaged in predatory conduct (p 67). Second, Lott argues that the manager of a public enterprise need not convince would-be competitors that he or she is willing to sacrifice profit, but merely that the manager "obtain[s] benefits from selling the product at the predatory price" (p 67). Third, Lott argues that "by eliminating private competitors, public enterprises may reduce the political opposition to their receiving increased subsidies," which may enable public enterprises to have "lower prices and expanded output" (p 68). Fourth, Lott argues that, because antitrust laws do not apply to public enterprises, the public predator can acquire the assets of its victim after a successful round of predatory pricing and thus keep those assets from falling into the hands of an entirely new entrant (p 71).

Lott's list, while useful, neglects powerful institutional details concerning public enterprises that may provide other reasons why public enterprises have stronger incentives to engage in predation than private firms. First, a public enterprise typically has a statutory duty to pursue objectives other than profit maximization. The U.S. Postal Service, for example, is required by statute to consider the fairness, equity, and simplicity of its rate structure as well as the relationships among prices, production costs, and the value of the service provided.⁴⁵ These deviations from profit maximization seem only natural for an enterprise that is not privately owned. Why would it be considered necessary to create a public enterprise in the first place if its mandate were to copy exactly what a private firm does? In the American economy, where public ownership of enterprise has been the exception rather than the rule, the very decision to create a public enterprise thus suggests an attempt by government to address some form of market failure (or, perhaps, income redistribution). For example, Oliver Hart, Andrei Shleifer, and Robert Vishny have theorized that public production is desirable when it is inherently difficult to write contractual provisions concerning an important element of service (such as quality).⁴⁶ William J. Baumol has argued that public production may be necessary to dull incentives that otherwise might

6, 1999).

⁴⁵ 39 USC § 3622 (1994 & Supp 1998).

⁴⁶ Oliver Hart, Andrei Shleifer, and Robert W. Vishny, *The Proper Scope of Government: Theory and an Application to Prisons*, 112 Q J Econ 1127, 1131-44 (1997).

produce excessive levels of the output in question. For example, if police were rewarded according to arrests, they might arrest too often. If such output-based compensation is more likely to occur in private firms than in public ones, then reliance on public enterprises may avoid this kind of moral hazard.⁴⁷

Second, unlike the private firm that may find it impossible to repel subsequent entry, public enterprises are often multiproduct firms that benefit from statutory monopolies over related products or services. Indeed, the U.S. Postal Service even claims to have the discretion to interpret the contours of its own statutory monopoly.⁴⁸ Thus, the Postal Service enjoys the ability to raise entry costs for private firms by defining the scope of competitive services that may be privately supplied.

Third, the public enterprise may enjoy privileges and immunities that facilitate recoument of predatory losses or make them irrelevant. The U.S. Postal Service, for example, has no obligation to compensate its investors, the American taxpayers.⁴⁹ The absence of an obligation to pay a return of, or on, invested capital lowers the opportunity cost of funds that a public enterprise may use to subsidize predatory losses. Similarly, the Postal Service has the ability to carry forward losses into the ratemaking process.⁵⁰ In addition, the Postal Service is exempt from taxation,⁵¹ which in effect lowers its cost of capital.

Fourth, the public enterprise may be subject to less binding price regulation than typical private firms subject to public utility commission regulations. The Postal Rate Commission, for example, lacks subpoena power and has limited powers to set maximum prices for postal services.⁵²

B. Empirical Analysis of Dumping Cases as Evidence of the Greater Propensity of Public Enterprises to Attempt Predation

In Chapter 4 of *Are Predatory Commitments Credible?*, Lott attempts to determine empirically whether predatory pricing by public enterprises is more likely than predatory pricing by private firms. He does so by "comparing the relative frequencies with which charges of

⁴⁷ William J. Baumol, *Toward a Theory of Public Enterprise*, 12 *Atlantic Econ J* 13, 17 (1984); Henry B. Hansmann, *The Ownership of Enterprise* 227-45 (Belknap 1996) (suggesting a possible role for nonprofit firms, public or private, when consumers have poor information about product quality).

⁴⁸ Sidak and Spulber, *Protecting Competition from the Postal Monopoly* at 18-19, 26-31 (cited in note 39).

⁴⁹ *Id.* at 2, 88.

⁵⁰ *Id.* at 116.

⁵¹ *Id.* at 2.

⁵² 39 USC §§ 3601 et seq (1994 & Supp 1998); Sidak and Spulber, *Protecting Competition from the Postal Monopoly* at 84-87, 159-60 (cited in note 39).

below-cost pricing are brought against private and government enterprises" (p 74). Thus, Lott seeks to draw inferences about the plausibility of predatory pricing by public enterprises by analyzing reported dumping cases in the United States, EEC, Canada, Australia, and Finland. Again, while clever, Lott's empirical work is nonetheless not definitive. There are a number of potential problems with his analysis.

First, it is not clear that antidumping statutes proscribe, and that Lott measures, the kind of conduct that economists describe as predatory pricing. Lott states that dumping involves "exporting at prices 'below normal value'" (p 75). But what relation does "value" bear to "cost"? Several pages later, Lott states that "the below-cost definition of dumping under international trade law closely accords with the concept of predation" (p 78). That statement is doubtful at least in the United States, where the purpose of even the closest antidumping statute fitting this description, the Antidumping Act of 1916,⁵³ is the subject of judicial and scholarly dispute as to whether it more closely resembles a predatory pricing rule or a price discrimination rule akin to the Robinson-Patman Act.⁵⁴ The Antidumping Act of 1921,⁵⁵ which was incorporated into the Tariff Act of 1930, did not require a showing that imports had been sold below cost. As amended and recodified, that statute instead turns on whether pricing "at less than fair value" has occurred and whether such pricing has caused or threatened "material injury" to an American industry.⁵⁶ Lott mentions that international regimes such as "GATT use[] a long-run average cost criterion" (p 145 n 10).⁵⁷ That criterion, however, is likely to be very distinct

⁵³ 15 USC §§ 71-74 (1994).

⁵⁴ 15 USC §§ 13a, 13b, 21a (1994). Compare *Geneva Steel v Ranger Steel*, 980 F Supp 1209, 1225 (D Utah 1997) (arguing that the plain language of the 1916 Antidumping Act clearly states a protectionist purpose), and Note, *Rethinking the 1916 Antidumping Act*, 110 Harv L Rev 1555 (1997) (arguing that "the Act's focus [is] on protecting U.S. industry—the traditional goal of trade law—rather than on maximizing efficiency and consumer welfare"), with J. Gregory Sidak, *A Framework for Administering the 1916 Antidumping Act: Lessons from Antitrust Economics*, 18 Stan J Intl L 377, 380-90 (1982) (arguing that Congress intended that Act to "proscribe only international predatory pricing").

⁵⁵ 19 USC § 160 (1947), repealed by Trade Agreements Act of 1979 § 106(a), Pub L No 96-39, 93 Stat 144, 193.

⁵⁶ Trade Agreements Act of 1979, 93 Stat 144, 162, codified at 19 USC §§ 1671 et seq (1994 & Supp 1995). A claim that a good has been sold at less than "fair value" can be made either by showing that the good was sold in the target country at less than its cost of production, or that it was sold in the target country for less than it was sold for in the exporting country (price discrimination). For a full discussion of antidumping claim standards, see William H. Lash, III, *US International Trade Regulation: A Primer* 23-47 (AEI 1998); Brian Hindley and Patrick A. Messerlin, *Antidumping Industrial Policy: Legalized Protectionism in the WTO and What to Do about It* 6-26 (AEI 1996).

⁵⁷ GATT only defines dumping as selling a good for "less than the normal value," and thereby "caus[ing] or threaten[ing] material injury to an established industry." General Agreement on Tariffs and Trade, Art VI § 1 (1994). To show that a good has been sold for less than normal value, a plaintiff may either show that it was sold (i) for less than its fair market value in

in practice from marginal cost or short-run average variable cost, which is the standard advocated by Areeda and Turner for antitrust cases and generally employed by U.S. courts to assess whether predation has occurred.⁵⁸ In theory and practice, a long-run average cost standard can differ significantly from a short-run average cost standard. In economics, the long run is defined by the period of time over which all factors of production, including capital, are variable.⁵⁹ In other words, capital costs are assumed to be fixed in the short run and thus do not enter short-run variable costs. Consequently, it is not clear that by focusing on dumping cases Lott is measuring actual incidents of predatory pricing in his sample.

Second, Lott claims that the mandate to "fulfill production targets" is "consistent with output-maximizing behavior" (p 76). True, but it is also consistent with other behavior. If the government instructs firms to produce less output than their technology permits, it is not clear that output is being maximized in any sense. Indeed, a defining feature of many nonmarket economies is the fact that prices do not adjust to equate supply and demand. Therefore, production surpluses or deficits are more likely at any given point in time for state-controlled firms than for market-driven firms (where price adjustments serve to reduce imbalances). Consequently, it should not be surprising that state-controlled firms will periodically have production surpluses that they cannot sell in domestic markets, and so attempt to sell them in foreign markets. It seems possible that Lott's empirical findings reflect this phenomenon rather than any natural tendency for public enterprises to price below cost more than their profit-maximizing counterparts.

Third, nonmarket economies may provide limited domestic competition. Public ownership and monopoly are often found together.⁶⁰

the home country, (ii) for less than the fair market price in a third country (price discrimination), or (iii) for less than the cost of production in the exporting country (p 124).

⁵⁸ Areeda and Turner, 88 Harv L Rev at 712 n 37 (cited in note 3) (proposing the marginal cost or short-run average variable cost standard in antitrust cases). For representative applications of, or variations on, the Areeda-Turner test, see *Kelco Disposal, Inc v Browning-Ferris Industries*, 845 F2d 404, 407 (2d Cir 1988) ("Prices [] below reasonably anticipated marginal cost, and its surrogate, reasonably anticipated average variable cost . . . are presumed predatory."), *affd*, *Browning-Ferris Industries v Kelco Disposal, Inc*, 492 US 257 (1989); *International Air Industries v American Excelsior Co*, 517 F2d 714, 723-24 (5th Cir 1975) ("[W]e do not believe that [a] monopolist's pricing behavior could be deemed anti-competitive unless the monopolist set a price below its marginal cost."); *William Inglis & Sons Baking Co v ITT Continental Baking Co*, 668 F2d 1014, 1032-38 (9th Cir 1981) ("If . . . the plaintiff proves that the defendant's prices were below average variable cost, the plaintiff has established a prima facie case of predatory pricing.").

⁵⁹ See, for example, Paul A. Samuelson and William D. Nordhaus, *Economics* 98 (McGraw-Hill 15th ed 1995).

⁶⁰ John Vickers and George Yarrow, *Privatization: An Economic Analysis* 45-46 (MIT 1988) (arguing that publicly owned companies often face no significant competition).

The limited competition may facilitate price discrimination, with high domestic prices and low prices on foreign markets. Such price discrimination would be profitable for profit-maximizing firms as well as for government enterprises.

Fourth, Lott is not able to control adequately for the trade barriers that particular countries impose. One reason to challenge a country in a world court may be to obtain concessions (as part of an informal settlement, perhaps) on trade barriers. If (generally) nonmarket countries erect higher trade barriers, then their pricing practices may be challenged in a world court more often, even though they are not engaged in any more predatory pricing than are market-oriented countries.

Fifth, formal challenges in world courts may be a last resort that is pursued only if all other forms of negotiation break down. If market-oriented countries have established better negotiation channels and use these channels more effectively than their nonmarket counterparts, then formal challenges of the former's pricing practices may be observed less frequently.

This partial list of problems suggests the difficulty in using dumping cases to test the plausibility of predation by public enterprises. Lott seems to recognize the shortcomings of the data that he employs, yet he decides to proceed anyway. Some might view that approach as hopelessly flawed. We incline toward a less critical, longer-term view. Lott deserves credit for undertaking an initial empirical analysis of important, interesting issues. He identifies some initial empirical regularities that merit close examination, and he also provides a framework on which other research can build.

III. AN AGENDA FOR RESEARCH ON THE ANTICOMPETITIVE BEHAVIOR OF PUBLIC ENTERPRISES

The plausibility of predation by public enterprises justifies careful examination of several fundamental questions by legislators, courts, regulators, and scholars. One set of questions concerns the conditions under which anticompetitive behavior by public enterprises might arise. A second set of questions concerns the proper policy response to predation by public enterprises and the implications of such predation for the role of public enterprises in a capitalist society. We consider each set of questions in turn.

A. Toward a More Complete Theory of Anticompetitive Behavior by Public Enterprises

Are Predatory Commitments Credible? is a valuable starting point for the development of a theory of anticompetitive behavior by public

enterprises, but much work remains to be done by scholars in law and economics. Lott, for example, does not provide a framework for analyzing firms that simultaneously pursue a mixture of profit maximization and other non-profit-maximizing objectives. Nor does his analysis extend beyond predatory pricing to other forms of behavior, such as raising the operating costs of existing rivals, erecting entry barriers to preclude the operation of new competitors, and circumventing regulations designed to foster competition.

In a recent working paper, we examine the incentives that public enterprises may have to undertake anticompetitive activities.⁶¹ Our analysis extends Lott's observation that public enterprises may set prices below marginal production costs and thereby harm competition and reduce welfare. We model formally the public enterprise's concern with both profit and its operating scale. The critical assumption in our analysis is that the public enterprise values expanded output more highly than does its profit-maximizing counterpart. We are able to extend Lott's analysis by specifying precisely when a public enterprise will price below marginal cost and how the prices that a public enterprise sets vary as its concern with profit varies. We find that public enterprises often have stronger incentives to pursue anticompetitive activities than do their private, profit-maximizing counterparts. Quite often, the less concerned the public enterprise is with profit, the stronger are its incentives to undertake activities that disadvantage competitors. Our analysis supports Lott's observation that a public enterprise might set the price of a product below its marginal cost of production. We find that below-cost pricing is most likely when the public enterprise's focus on profit is limited and when the demand for the public enterprise's product is elastic. We also find that a public enterprise typically has stronger incentives than a profit-maximizing firm to devote resources to relaxing a binding prohibition against below-cost pricing.

B. The Legal and Policy Implications of Anticompetitive Behavior by Public Enterprises

As a matter of sound policy formulation, it is necessary to develop a coherent understanding of why government creates public enterprises that compete against private firms. For any given public enterprise, we should ask a series of questions. What is its reason for ex-

⁶¹ David E.M. Sappington and J. Gregory Sidak, *Incentives for Anticompetitive Behavior by Public Enterprises*, AEI-Brookings Joint Center for Regulatory Studies, Working Paper 99-11 (AEI November 1999), available online at <http://www.aei.brookings.org/publications/working/working_99_11.pdf> (visited on Jan 8, 2000).

istence?⁶² Has its current mission deviated from the original statutory mandate? What do the managers of the public enterprise actually maximize? What privileges and immunities does the enterprise enjoy, and how congruent are those benefits with the mandates of the public enterprise? At present, the legal and economic analysis of public enterprises does not provide fully satisfactory answers to these questions.

The optimal design of regulatory policy for public enterprises also has received little attention in the literature and deserves careful study. It is important to determine, for example, whether the benefits that price-cap regulations provide when applied to profit-maximizing firms persist when price-cap regulations are applied to public enterprises. The driving force that produces consumer benefits when price-caps are applied to a privately owned firm—the firm's incentive to minimize costs in order to increase profits—may be less pronounced when price-caps are applied to public enterprises. One therefore would not expect public enterprises to respond in the same manner as privately-owned utilities to the economic incentives that price-caps present. It is conceivable, for example, that public enterprises might have greater incentives than their private counterparts to set prices strategically in order to relax binding price-cap constraints,⁶³ or to employ the expanded freedoms of price-cap regulations to price below marginal cost.⁶⁴

The optimal design of antitrust law as applied to public enterprises also merits extensive study. We have shown that a public enterprise may have greater incentive to engage in anticompetitive practices and circumvent antitrust laws than its private counterpart. Heightened antitrust scrutiny would therefore seem to be appropriate for the pricing decisions of public enterprises. It may be more appropriate for courts to permit more liberal discovery of facts relevant to predation and more readily allow claims of predatory pricing to advance to trial when such suits are brought against public enterprises. In addition, it is conceivable that courts should be more willing to grant preliminary injunctions to halt allegedly anticompetitive conduct by public enterprises than by private enterprises, since success on the merits is more likely in cases against public entities. For similar

⁶² See notes 45–47 and accompanying text.

⁶³ For models of incentives created by price-cap regulation in the telecommunications industry, see Peter Law, *Welfare Effects of Pricing in Anticipation of Laspeyres Price Cap Regulation: An Example*, 49 Bull Econ Research 17 (1997); R. Dean Foreman, *Pricing Incentives Under Price-Cap Regulation*, 7 Information Econ & Pol 331 (1995); David E.M. Sappington and David S. Sibley, *Strategic Nonlinear Pricing Under Price-Cap Regulation*, 23 RAND J Econ 1, 3–9 (1992).

⁶⁴ Mark Armstrong and John Vickers, *Price Discrimination, Competition and Regulation*, 41 J Indus Econ 335, 349–53 (1993).

reasons, more stringent antitrust penalties may be appropriate for public enterprises. Of course, financial penalties may have little force if the public enterprise is able to pass those penalties on to citizens in the form of higher prices. More fundamentally, antitrust enforcement of any kind against public enterprises would raise the antecedent question of the proper scope of sovereign immunity for the proprietary, as opposed to political, actions of governments.

Yet another set of issues concerns judicial review: should a court grant *Chevron* deference to a public enterprise's interpretation of its own competitive privileges and immunities? As noted earlier, the United States Postal Service claims to have the discretion to interpret the boundaries of its own monopoly by virtue of its rulemaking authority regarding the definition of a letter.⁶⁵ The commercial motivations of the Postal Service may compromise its impartiality when defining a letter (including an "extremely urgent" letter). Thus, a legitimate question that arises is whether a reviewing court should defer, under *Chevron* or similar precedents, to the Postal Service's interpretations of postal statutes that bear upon its statutory privileges and immunities.

CONCLUSION

An increasingly frequent theme sounded in competition policy throughout the world's developed economies is that public enterprises are engaged in anticompetitive behavior aimed at private enterprises. *Are Predatory Commitments Credible?* thus arrives on the scene at a propitious moment. One major contribution of Lott's book is to underscore the importance of long-run profit maximization as an assumption in the analysis of predatory pricing. When one drops that assumption, as should be done in the case of a public enterprise, the plausibility of predation grows and presents a paradox: the firms that may most deserve the government's scrutiny with respect to predation are the government's own enterprises.

⁶⁵ See note 48 and accompanying text.