

# Experimental Analysis of Antitrust Issues

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***Abstract.** Controlled experiments provide unique perspectives on antitrust issues pertaining to behavior that is otherwise difficult to observe. One example is collusion, since the illegality of this conduct gives participants strong incentives to conceal it. Another example is predatory pricing, which may deter potential competitors without producing easily observable instances of exclusionary pricing, especially in the typical case of a multiproduct firm with evolving and uncertain cost conditions. This entry summarizes some of the insights that antitrust experiments have provided as well as the difficulties that have been encountered.*

Experiments allow antitrust economists to see behavior that otherwise is rarely seen. One example is collusion. The illegality of this conduct gives conspirators strong motives to conceal as much of their behavior as possible (Isaac & Plot 1981). Another example is predatory pricing. Credible threats of predation may deter entry without generating observable instances of low pricing and exit. Predatory pricing may also be difficult to distinguish from competitive behavior in observational data (Edlin et al 2019). By providing visibility into conduct like collusion and predation, controlled experiments empower economists to act as engineers in the design of effective antitrust policy (Roth 2002).

Complicating this use of experiments, however, is the apparent sensitivity of anticompetitive behavior to context, framing, and procedural details. The argument that experiments test theories in best-case environments (Isaac & Plot 1981) lacks credibility when underlying theories do not unambiguously suggest what conditions are likely to foster predicted behavior. To be useful, antitrust experiments either must reproduce important features of the markets they are being used to study or must produce results that are reasonably robust to perturbations. Experiments on collusion and predatory pricing provide examples.

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## **Collusion**

Tacit collusion has been the focus of hundreds of experiments. Summarizing work on Cournot markets, Huck, Normann, and Oechssler (2004) find collusion to be rare in markets with more than two competitors. In a larger survey not limited to Cournot markets, Engel (2007) reports collusion to be greatest in duopoly market experiments, but with surprising deviations. Because tacit collusion appears fragile with multiple competitors, it may be tempting to interpret the literature as providing evidence against predictions of tacit collusion in antitrust matters. But that temptation should be resisted. Collusion in infinitely repeated oligopoly games requires coordination on strategies and opportunities for communication (not rising to the level of express collusion) may facilitate this coordination in ways that are prohibited by severe restrictions on communication in many experiments. If researchers restrict communication too much, then they may find evidence that tacit collusion is difficult precisely because they have studied behavior under conditions in which collusion is difficult.

From an antitrust perspective, the most interesting experimental research is thus the study of tacit collusion under different levels of freedom of communication and information. Experiments, going back to the work of Isaac and Plot (1981) have generally indicated that opportunities for non-binding communication increase the frequency and extent of tacit collusion. This opens the door to further questions. Engel (2007) observes that previous work has shown opportunities for communication to have different effects depending on the number of competitors and the ways in which they compete. Davis and Holt (1998) report an experiment in which opportunities for seller communication were followed by opportunities to strike secret discounts. Most colluding sellers were eventually able to establish near-monopoly prices in a baseline treatment, but these price agreements typically fell to competitive levels when sellers could offer secret discounts to specific buyers. List and Price (2005) report similar results in a lab-in-field experiment performed with professional subjects. When and how opportunities for imperfect communication facilitate tacit collusion is a question of great practical importance in antitrust, and upon which experimental study has proven to be a valuable source of information.

## **Predatory Pricing**

In an early series of experiments on predatory pricing, Isaac and Smith (1985) used laboratory experiments to study markets in which predation seemed likely to arise, e.g, a duopoly market structure in which one firm was large, cost advantaged, and had free cash to fund predatory behavior. In some cases, entry also exposed firms to sunk costs not recoverable on exit. Despite these seemingly favorable conditions, none of the 11 market sessions yielded evidence of predation, as indicated by the paper title “In Search of Predatory Pricing.” The authors

hypothesized that different conditions might support predation and invited others to identify what was missing.

Harrison (1988) responded to this challenge by expanding the single-market, single-entrant setting to include multiple competitors who could decide which of several markets to enter concurrently. Harrison and List (2004) argue that a subject in a single-market design has no option but to enter in order to avoid the boredom of simply observing the outcome determined by another player. The dominant firm also played to an audience of one in the single-market design, potentially reducing its incentive to act aggressively. Harrison's multiple-market design relaxed both of these limitations.

With these modifications in place, Harrison conducted a single session of a classroom experiment and reported substantial evidence of predatory behavior. In a replication study, Gomez and Goeree (1998) initially failed to find similar evidence of predatory pricing. Predation reappeared, however, when the setup was modified by simplifying the demand structure and separating entry and pricing decisions, with prices chosen after entry decisions were made and revealed. These clarifications may have helped subjects to better understand their economic incentives (Gomez, Goeree & Holt 2008). As subjects in Harrison's (1988) experiment had gained experience working with similar markets in prior market simulations, an interesting conjecture is that the Gomez and Goeree (1998) procedural modifications substituted for learning from experience in facilitating predatory behavior. If so, these results might suggest that subject experience or prior training is a variable to track when studying predatory behavior with laboratory experiments.

Moving beyond tests of theory, experiments have also been used to evaluate policy proposals for addressing predatory behavior. Edlin et al. (2019) compares the efficacy of current antitrust policy (which roughly prohibits below-cost pricing) against academic proposals to prohibit post-entry price cuts or post-exit price increases. The intriguing result is that current law yields greater total welfare (but not greater consumer welfare) than either of the ex-post price constraints (Edlin et al. 2019). If antitrust policymakers ever decide to update their approach to predatory pricing, their deliberations will benefit from experimental study of this subject.

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