

Behavioral Antitrust and Merger Control

by

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Scholarship on competition policy has begun to explore the implications of learning from behavioral research and to challenge the assumption of profit maximization at the heart of neoclassical economic theory of the firm. This scholarship is briefly reviewed, focusing on merger control. Prospects for basing merger control entirely on data from actual mergers or laboratory experiments are explored. Also explored are implications of behavioral research for merger assessment in consumer goods industries. The conclusion is that competition policy should continue to rely on neoclassical economic analysis based on the assumption of profit maximization. (JEL: K 21, L 41)

1 Introduction

Competition law in the United States is largely judge made, and coherent doctrinal principles were slow to emerge. In the mid twentieth century, critics could argue with some justification that prevailing judicial interpretations of the law were doing more harm than good. Scholars associated with the University of Chicago Law School (e.g., BORK [1978], DIRECTOR AND LEVI [1956], and POSNER [1976], [1979]) sought to rationalize competition law by applying economics. Many scholars (e.g., CALABRESI [1970], COASE [1960], POSNER [2007], SHAVELL AND POLINSKY (eds.) [2007]) also applied economics to other areas of law, spawning the field of law and economics.

Over decades, economics-based critiques of competition policy gained significant influence in the courts, and the demand for economic analysis was met with ample supply. Equipped with tools from game theory and econometrics, economists contributed countless applications of economic analysis to competition policy. As compared with early work by legal scholars, more recent work by neoclassical economists is vastly more sophisticated, and it is not associated with any particular school or philosophy (see, e.g., the contributions in BUCCIROSSI (ed.) [2008]). The tools of neoclassical economics now play a vital

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role in the analyses conducted by competition agencies and in the litigation of competition cases, and those tools are used to support market intervention as much as to oppose it. Economists, on the whole, are reasonably content with this state of affairs, as competition law provides both gainful employment and intellectual stimulation.

While competition law was embracing neoclassical economics, behavioral research, mostly conducted by psychologists, was examining how individuals make decisions. DELLA VIGNA [2009] and RABIN [1998] review a great deal of behavioral research finding evidence inconsistent in various ways with the assumption of utility maximization at the core of neoclassical economic theory of the consumer. Applying learning from behavioral research, a new generation of scholars (e.g., JOLLS [2007], JOLLS, SUNSTEIN AND THALER [1998], SUNSTEIN (ed.) [2000]) began to rethink the study of law and economics and question some of its core ideas.

Based on the same learning, a few legal scholars (e.g., REEVES AND STUCKE [2010], STUCKE [2007], TOR [2002], [2003], TOR AND RINNER [2010]) have begun to question doctrines in competition law, advancing what they term “behavioral antitrust.” Rather than focus on consumer behavior and the assumption of utility maximization, they mainly focus on the assumption of profit maximization at the core of neoclassical economic theory of the firm.

This essay begins with a brief introduction to behavioral antitrust. The focus then narrows to merger control, an aspect of competition policy addressed by both REEVES AND STUCKE [2010] and STUCKE [2007]. We review and assess behavioral critiques of merger control, explaining at several points how behavioral antitrust could undermine enforcement. We then explore prospects for merger control based entirely on data from actual mergers or on laboratory experiments, rather than neoclassical economic theory. Finally, our focus narrows further to mergers involving consumer goods. For these mergers, lessons from behavioral research on individual decision making are most directly applicable. We first review those lessons, then offer tentative views on how merger assessment should apply them.

2 Behavioral Antitrust and Its Foundation

We introduce behavioral antitrust by way of example – the behavioral analysis of resale price maintenance (RPM) put forward by TOR AND RINNER [2010]. They posit that decision making by manufacturers is subject to the behavioral biases observed in individual decision making. They argue, for example, that manufacturers overreact to dealer complaints about price cutting as a result of what psychologists call “anchoring,” which occurs when a decision maker places too much importance on one event or piece of information. They also argue that manufacturers make decisions in the interest of fairness and out of loss aversion, rather than to maximize profits. And they argue that manufacturers process information in a manner that leads them to overestimate the benefits of RPM. As a consequence of these behaviors and others, Tor and Rinner conclude that manufacturers adopt or retain RPM when its use is inconsistent with profit

maximization and thus lessens social welfare.

To account for the possibility that RPM was adopted or maintained by mistake, Tor and Rinner propose to alter the burdens in litigation. They propose that a manufacturer using RPM be required to show that it is the least restrictive means to solve a real business problem, provided that the plaintiff first shows that using RPM decreased the manufacturer's output. By design, the plaintiff's showing does not distinguish between anticompetitive uses of RPM and uses that are competitively neutral but socially inefficient.

We entirely agree with Tor and Rinner that the firms make mistakes and that the marketplace does not always correct them, but we do not share Tor and Rinner's view that competition policy should step in. The premise of competition law is that the unfettered competitive process best promotes social welfare; hence, market intervention is warranted only when the competitive process breaks down. Competition policy should not condemn a practice that does not impede the competitive process even if the practice does lessen social welfare.

Proponents of behavioral antitrust draw on "behavioral economics," the study of individual decision making, mainly done by psychologists, focused on systematic departures from the standard model of rational choice. Learning from this research can have significant policy implications when the behavior of individuals in market settings is at issue, as it always is in consumer protection, and sometimes is in competition policy. But what psychologists have learned about how individuals make decisions need not carry over to firms, which are the focus of competition policy. The study of decision making by firms is a specialized field combining sociology with organization theory, and this field has not generated a great deal of empirical evidence (see CAMERER AND MALMENDIER [2007], CAMERER AND WEBER [2011]). Moreover, what really matters in competition policy is not so much the behavior of firms as the performance of markets, which need not be significantly impaired by firm decision making subject to behavioral biases.

The test for whether an economic model is useful a particular competition case is whether it accurately describes the outcome of the competitive process, for example, prices and market shares, not whether it accurately portrays market institutions or how the firms in the market actually make decisions (see WERDEN, FROEB, AND SCHEFFMAN [2004]). This test derives from the philosophy of FRIEDMAN [1953, p. 15] that "the relevant question to ask about the 'assumptions' of a theory is not whether they are descriptively 'realistic,' for they never are, but whether they are sufficiently good approximations for the purpose in hand. And this question can be answered only by seeing whether the theory works, which means whether it yields sufficiently accurate predictions."

Industrial organization economists have not been content to theorize about the behavior of firms and markets. There are long traditions of performing both detailed case studies and empirical analyses; moreover, beginning with CHAMBERLIN [1948], economists also have done experimental research. That research compares the outcomes from interaction among laboratory subjects to the outcomes predicted in models used in industrial organization economics. That research also provides a basis for selecting among competing models generating divergent predictions.

As surveyed by ARMSTRONG AND HUCK [2010], laboratory experiments have identified some apparent departures from profit maximization. But laboratory experiments also have shown that the irrationality of the people who trade in markets need not have significant implications for market performance. As SMITH [1991, p. 894], a leading experimental economist, put it, “human subjects in the laboratory frequently violate the canons of rational choice when tested as isolated individuals, but in the social context of exchange institutions serve up decisions that are consistent (as though by magic) with predictive models based on individual rationality.”

Two experiments illustrate the point. ROTH et al. [1991] analyzed the ultimatum game, in which a player who values an item makes a take-it-or-leave-it offer to a player who possesses the item but places no value on it. They found that individual subjects tended to divide the gains from trade rather evenly, although game theory predicts that the first player captures all the value. But when the game was played in a market setting, with multiple bidders competing to acquire the item, the outcome was as predicted by game theory. GODE AND SUNDER [1993] analyzed double oral auctions in which multiple buyers and sellers shout out offers and acceptances. They found that such markets performed efficiently, in that they yielded nearly the maximum gains from trade, even if traders bid randomly. The randomness of bids was disciplined by the requirement that trades be settled. While Smith might have overstated the magic of markets, experimental work by economists has demonstrated that the behavioral biases in individual decision making need not prevent markets from working as neoclassical economic theory predicts.

3 Behavioral Antitrust’s Critique of Merger Policy

Under the banner “behavioral antitrust,” REEVES AND STUCKE [2010] (much as STUCKE [2007]) critique competition policy in the United States, including merger control. As a foundation, they review the Chicago School paradigm set out by BORK [1978] and POSNER [1979], and they review how the assumption of profit maximization has been used in court decisions and the Horizontal Merger Guidelines issued by the U.S. enforcement agencies. Reeves and Stucke then argue that merger assessments by the agencies and courts rely on untested, and likely erroneous, presumptions from neoclassical economics and the Chicago School. We examine the extent to which these presumptions actually exist, the basis for them, and their impact.

Reeves and Stucke argue that an untested presumption on the power of entry allows potentially anticompetitive mergers to go forward, but they muster no evidence indicating that reliance on the profit-maximization assumption currently leads competition agencies or courts to make erroneous judgments relating to entry. Moreover, the key influence on entry was not the Chicago School, but rather the contestability theory of BAUMOL [1982]. The publication of this theory was quickly followed by court (and regulatory agency) rejections of merger challenges on the basis that entry would prevent any harm. But this contestability bubble burst when theoretical analysis demonstrated the fragility of contestability

theory and empirical analysis demonstrated the theory's failure to predict market performance.

Reeves and Stucke correctly observe that the Horizontal Merger Guidelines issued by the U.S. enforcement agencies presume that entry will occur if, and only if, it is profit maximizing, but this presumption has a long history in the law. In 1972, a Supreme Court Justice who never followed the Chicago School (MARSHALL [1972, p. 568]) declared that "objective evidence" was critical on the likelihood of entry and that it must derive from the assumption that a potential entrant will "act in its own economic self-interest" and therefore "can be expected to follow courses of action most likely to maximize profits." WERDEN AND FROEB [1998] show that the implication of the profit-maximization assumption is that entry normally does not counter anticompetitive merger effects; in models supporting unilateral effects theories, mergers rarely create a significant profit incentive for entry. Consistent with this analysis, the U.S. enforcement agencies have articulated a skeptical view of the power of entry to prevent anticompetitive effects from mergers (see U.S. DEPARTMENT OF JUSTICE AND FEDERAL TRADE COMMISSION [2006, pp. 37–47]).

Behavioral research has not found that entry fails to occur when a profitability test indicates that it should; rather, CAMERER AND LOVALLO [1999] found that laboratory subjects sometimes enter even when it is not profit-maximizing to do so. This could suggest that entry is a more potent competitive force than the profit-maximization assumption suggests, but proponents of behavioral antitrust argue that non-profit-maximizing entry almost certainly is unsuccessful.

Reeves and Stucke argue that untested presumptions about efficiencies are responsible for allowing potentially anticompetitive mergers to go forward, but the U.S. enforcement agencies have been very skeptical about efficiencies claims, and no U.S. court decision has rejected a merger challenge on the grounds that efficiency gains outweighed the loss of competition from a merger. The U.S. enforcement agencies have reported that they occasionally found efficiencies to be a significant factor in decisions not to challenge mergers (see U.S. DEPARTMENT OF JUSTICE AND FEDERAL TRADE COMMISSION [2006, pp. 49–59]), but such determinations were based on detailed reviews of the evidence on those particular mergers, and not on presumptions.

Reeves and Stucke propose more empirical research on the extent to which mergers raising competitive issues generate significant efficiencies, and we welcome such research. But such research has limited potential to guide in the assessment of efficiencies in particular cases. If studies find that managements have overestimated efficiency gains by an *average* of 100%, should merger assessments arbitrarily halve all efficiency claims? Surely the specific facts of each case must be evaluated, and past prediction errors by other companies cannot be given controlling weight.

What may be the most significant implication of behavioral research for efficiencies concerns the pass through of cost reductions. Although neoclassical economic theory based on the assumption of profit maximization predicts that a reduction in fixed costs resulting from a merger normally has no short-term mitigating effect on price increases, behavioral research finds that fixed and sunk costs do affect prices (see AL-NAJJAR, BALIGA, AND BESANKO [2008]). BENNETT

et al. [2010, pp. 124f.], OLDALE [2010, p. 143]), and REEVES [2010, p. 8] observe that this suggestion implies that merger efficiencies perhaps should be given more weight than currently is the case.

Reeves and Stucke additionally argue that competition law applies the untested presumption that powerful buyers can thwart the exercise of market power. Although a few U.S. court decisions have cited buyer power a relevant factor in refusing to enjoin mergers, Reeves and Stucke note that the U.S. enforcement agencies (U.S. DEPARTMENT OF JUSTICE AND FEDERAL TRADE COMMISSION [2006, pp. 17f.]) have stated that: “Large buyers rarely can negate the likelihood that an otherwise anticompetitive merger between sellers would harm at least some buyers.” Reeves and Stucke speculate that this view was based on behavioral research, but neoclassical economic theory lends no support for broad-ranging power buyer arguments.

Reeves and Stucke also argue that the currently used safe harbor level of concentration mistakenly presumes that coordinated pricing is impossible without fairly high levels of market concentration. In this regard, they draw on behavioral research to explain why successful coordination is feasible even with large numbers of competitors. ARMSTRONG AND HUCK [2010, pp. 8–12] and BRENNAN [2009, p. 27] suggest that this application of behavioral research might have merit. On the other hand, ANDREONI [1995] finds that cooperation does not occur when subjects’ actions have negative effects on each other, as in an oligopoly game, and HUCK, NORMANN, AND OECHSSLER [2004] find that coordination occurs in the laboratory setting only when the number of competitors is quite small. In any event, Reeves and Stucke do not contend that there is any basis for reliably predicting non-trivial anticompetitive effects from mergers causing modest increases in concentration in markets that remain unconcentrated. Rather, they merely propose more research on the relationship between concentration and market performance, which already is one of the most studied relationships in economics (for a literature review, see SCHMALENSEE [1989]).

Reeves and Stucke do not consider the one important presumption in U.S. merger control – that the merger of direct competitors with large market shares produces substantial anticompetitive effects. Many critics of merger control argue that this critical presumption lacks empirical support. We note, however, that it does find some support in behavioral research. MARES AND SHOR [2008] find that experiments on common value auctions support this presumption even when the subjects in the experiments fall prey to the winner’s curse and market outcomes do not conform to the predictions of standard theory.

4 Merger Control Based on Data from Past Mergers

If the assumption of profit-maximization and neoclassical economic theory were discarded in the name of behavioral antitrust, something would have to take their place in sorting through all the proposed mergers and identifying the relative few that violate merger laws. Reeves and Stucke propose a research program designed to determine the actual effect of mergers that were investigated then allowed to proceed.

We agree that more evidence on actual merger effects would be useful, but a merger control regime based entirely on the observed effects of past mergers would not be workable. Every merger presents a unique array of complex facts, so no clear patterns need emerge in the data on past mergers. In a jurisdiction like the United States, in which a merger cannot be stopped without evidence that it likely would be significantly anticompetitive, data on the effects of past mergers often would not be sufficiently convincing. No two mergers are exactly alike, so merging firms always could point to differences from all past mergers, and the available data could never be rich enough to demonstrate that none of the differences matter.

Informing merger assessments with data on past mergers also presents substantial challenges. One challenge is isolating the impact of a merger from the impact of other economic forces affecting the performance variables of interest. The mergers Reeves and Stucke propose to study were all determined not to lessen competition significantly, so their impacts are apt to be difficult to isolate from the background noise. Different empirical methodologies could yield substantially different results (see FEDERAL TRADE COMMISSION [2005]), and confounding events roughly coincident with a merger could make it impossible to attribute causal responsibility.

Another challenge is identifying systematic errors in merger assessment. A significant incidence of false negatives (mergers allowed to proceed that later proved anticompetitive) does not imply that the agency or court made mistakes. Prediction is inherently uncertain, and the best possible merger control regime most likely would have significant rates of error. CARLTON [2008] outlines a research design for identifying systematic errors, which entails recording each important element of an agency's assessment then checking the accuracy of those particular judgments, rather than its overall assessment of the merger.

A third challenge is generating information on false positives (mergers not allowed to proceed even though they would not have proved anticompetitive). Proponents of behavioral antitrust are not the only critics of merger control, and some other critics suspect a high rate of false positives. Generating a wealth of information about false positives, however, would entail a social experiment of enormous cost; it would require a lengthy suspension of merger control to unfetter merger activity, while retaining merger assessment in order to generate predictions for testing against the data.

If any of the foregoing challenges were met, data on the effects of past mergers could prove useful in merger control, but data could not take the place of neoclassical economics based on the assumption of profit maximization even if all of the challenges were met. Economic reasoning is used to make sense out of complex real-world facts (see WERDEN [2009]), and economic models provide the basis for predicting that particular mergers would lessen competition. The central role of economic theory is particularly clear with unilateral effects. As detailed by WERDEN AND FROEB [2008], unilateral effects theories are based on models of one-shot oligopoly games with noncooperative equilibria. Empirical evidence on the actual effects of past mergers can be used to test these models and to choose among them, but ultimately these models provide the primary tools agencies use to determine when likely unilateral effects justify stopping a merger.

5 Merger Control Based on Laboratory Experiments

From a behavioral perspective, reliance on laboratory experimentation is the obvious alternative to reliance on economic theory in predicting the competitive effects of mergers, and experimental economic research has examined the effects of mergers (e.g., DAVIS AND HOLT [1994], FONSECA AND NORMANN [2008], and HUCK et al. [2007]). We explore prospects for reliance on experiments in the specific context of bargaining. As described by WERDEN AND FROEB [2008, pp. 62ff.], bargaining theory can be used to predict price effects from the merger of firms that sell through long-term contracts negotiated with individual buyers. In the United States, this theory has been used to assess the competitive effects of mergers between hospitals, which sell their services in this way to health plans.

CHIPTY AND SNYDER [1999] consider the case of a single seller bargaining separately with multiple buyers and show that the seller can exercise market power if the demand and cost conditions in the market make the surplus function concave, i.e., if the gain from the first sale is more than from the second sale, and so forth. We analyze a simple model capturing this insight. Our model has a central player, C , bargaining separately and simultaneously with players P_1 and P_2 . It does not matter for present purposes whether C is the buyer or the seller in these transactions. In this model, we posit a merger between P_1 and P_2 and ask whether the merged player captures a bigger share of the gains from trade than did P_1 and P_2 . If so, the merger has an anticompetitive effect (which might be offset by efficiencies).

We introduce concavity in a simple way, assuming that the total surplus is 1 when C strikes a bargain with both P_1 and P_2 and the surplus from a bargain with either just P_1 or just P_2 is $v > 1/2$. When C bargains with the merged player, the Nash axiomatic bargaining solution (NASH [1950], [1953]) predicts that the surplus is divided equally, so C 's surplus is $1/2$. Before the merger, imagine that C strategically exploits its position by telling P_1 and P_2 that it has struck a bargain with the other, so each has a marginal contribution to total surplus of $1 - v < 1/2$. C 's surplus is then v if it equally divides the marginal surplus with both P_1 and P_2 . Because the surplus function is concave, the merger produces an anticompetitive effect and reduces C 's surplus from v to $1/2$. Under the foregoing assumptions, several axiomatic solutions to the bargaining game (the least core, the prenucleolus, and the prekernel, see PELEG AND SUDHÖLTER [2007]) yield the same division of the surplus. Using the Shapley value to determine the allocation of the surplus, the merger reduces C 's surplus from $(1 + v)/3$ to $1/2$.

In assessing a merger in a bargaining context, a competition agency or court could be guided by theory telling the agency to look for evidence that the surplus function is concave and that this concavity is exploited strategically. In practice, concavity of the surplus function is related to the degree of competition between the merging firms from the perspective of those with which they bargain. For example, if two hospitals are viewed as good substitutes by the insured population, a health plan could play them off against each other in bargaining over prices paid for services provided to the plan's subscribers. The effect of a proposed merger could be predicted quantitatively by first estimating the curvature of the surplus function, as CHIPTY AND SNYDER [1999] did for the cable

television industry.

Whether real-world multilateral bargaining divides the surplus as theory predicts is critical in predicting the effects of a merger, yet the solution concepts for these games are built on conjecture. Recognizing this, NORMANN, RUFFLE, AND SNYDER [2007] designed a laboratory experiment to test the theory. In their experiment, a single buyer accepted or rejected take-it-or-leave-it offers from three competing sellers. The game was played with concave, convex, and linear surplus functions. Normann, Ruffle, and Snyder found that the offers made by sellers did not comport with those predicted by theory, but the impact of mergers did depend on the concavity of the surplus function.

The experimental design of Normann, Ruffle, and Snyder imposed a great deal of structure that might not reflect how real-world bargaining occurs, so two of the present authors (Froeb and Shor) conducted a similar experiment, with just two sellers, in which the parties were allowed to communicate, make offers and counter-offers, and retract offers or counter-offers. In this free-form bargaining environment, the outcome was different; the buyer generally bought from both sellers and the three players generally divided the surplus equally regardless of the concavity of the surplus function. Indeed, the surplus was divided equally even if the surplus from first sale was five times that from the second, so the buyer sacrificed some surplus in making a second purchase. The observed behavior in this experiment conformed to the predictions of neither cooperative nor non-cooperative bargaining theory; rather, fairness considerations appeared to govern behavior, with subjects not acting strategically.

Other laboratory experiments have found that subjects act in the interest of fairness, and the stylized fact that buyers and sellers do not bargain strategically could be viewed as a basis for a policy of indifference toward mergers in industries where trade occurs through long-term contracts that sellers negotiate with individual buyers. But we doubt that a competition agency or court would adopt such a policy, especially when that would permit the merger of the only two competitors in a market. One reason is that laboratory experiments find that subjects act much more in their pecuniary self-interest, and much less in the interests of fairness, with anonymity (see HOFFMAN, MCCABE, AND SMITH [1996]) or with subtle changes in framing (see ANDREONI [1995] and BRANAS-GARZA [2007]). A more powerful reason is that laboratory experiments might not reflect decision making by firms.

As BECKER [2002] and LEVITT AND LIST [2007, pp. 355–359] stress, firms do not randomly select individuals from the general population to make their important decisions, but rather hire and promote employees on the basis of their skills. Even if most individuals make badly biased decisions in the face of risk and uncertainty, Wall Street analysts do not because they are selected for their understanding of probability theory. Large business organizations also design mechanisms to correct biases they cannot screen for. Moreover, firms make decisions within specific industry contexts and generally on the basis of experience in those contexts, while laboratory experiments generally avoid contextual reference and contextual experience. COOPER et al. [1999] find that firms adopt heuristics that work well in the contexts in which they are applied but fail badly when applied to similar problems. Hence, the observation that

laboratory subjects fail to solve a representation of a business problem does not mean that actual firms similarly fail to solve the real-world problem. Finally, bureaucracies, rather than individuals, make many decisions in large firms, so decisions are the product of corporate codes, committees, and cultures, none of which are replicated in laboratory experiments.

6 Learning from Psychology on Individual Decision Making

If consumers make choices differently than posited by the standard model of consumer behavior, adjustments could be needed, and provided, in the assessment of mergers of firms selling consumer goods. Before considering any adjustments, we review insights from psychology, following the schema of DELLA VIGNA [2009], who categorizes them on the basis of how they relate to the standard economic model – by implying nonstandard preferences, nonstandard beliefs, or nonstandard decision making.

Nonstandard preferences are implied by choices observed in several settings. For example, individuals make choices involving a temporal dimension consistent with “hyperbolic discounting,” in which the near future is discounted at an exceptionally high rate and the more distant future is discounted at a much lower rate (see RUBINSTEIN [2003]). This can lead, for example, to the apparent absence of self-control so that individuals engage in behaviors such as failing to quit smoking, start exercising, or save. Individuals also make choices involving risk consistent with the prospect theory of KAHNEMAN AND TVERSKY [1979], which holds that decisions depend on a point of reference and that individuals act to avoid losses. A consequence of this theory, which itself has substantial empirical support, is that willingness to pay differs from willingness to accept. Finally, individuals make choices that are not self-interested in the narrowest sense, as with giving to charity.

Nonstandard beliefs include, most importantly, overconfidence: Individuals tend to overestimate both their abilities to perform skilled tasks and the likelihood that things will work out well. Overconfidence is one of the psychological biases documented in the business world. Individuals also overweight information most readily at hand, for example, by taking recently selected lottery numbers to be particularly indicative of the underlying distribution from which they were selected.

Nonstandard decision making is a manifestation of the fact that rational choice presents complex maximization problems that individuals cannot (or do not) solve. Rather, choices are based on heuristics. Consequently, the framing of decision problems affects choices. Critical information might be overlooked, for example, shipping costs or taxes associated with a purchase. And the abundance of choice is dealt with by excessive diversification, choosing what is familiar, choosing randomly, or avoiding choice. Both social pressure and emotion also affect decision making.

It should be kept in mind, of course, that the foregoing insights are researchers’ interpretations of their data. Even if the existence of significant departures from the standard model of consumer behavior is clear, how individuals actually make decisions is not. For example, PLOTT AND ZEILER

[2007] experimentally confirm asymmetry between willingness to pay and willingness to accept, but they dispute the “endowment effect” interpretation of the experiments and fault the experimental design that originally led to that interpretation. And HOFFMAN, MCCABE, AND SMITH [1996] experimentally demonstrate that the outcome of the ultimatum game depends on exactly how players are instructed and whether they act with anonymity.

7 Merger Control with Nonstandard and Irrational Customers

A point easily overlooked by non-economists is that departures from the standard model of consumer behavior need not imply irrationality or provide a rationale for abandoning neoclassical economic theory of consumer behavior. As RABIN [2002, p. 685] explained, “the trend” among economic theorists “is toward integrating apparently true and apparently relevant new psychological assumptions into economic analysis.” Into models of rational choice, GUL AND PESENDORFER [2004] integrate behavioral learning on temporal choice; BERNHEIN AND RANGEL [2004] integrate addiction; and COMPTE AND POSTLEWAITE [2004] integrate confidence.

This trend is relevant to merger control. Consider the merger of sellers of durable goods when buyers must also purchase proprietary complements (e.g., service or printer ink cartridges). If buyers are known to engage in hyperbolic discounting, it is feasible to analyze competition using a model of consumer choice incorporating that behavior. To the extent that psychology can identify what ARIELY [2010] calls “predictably irrational” decision making by consumers, neoclassical economics can determine how profit-maximizing firms optimally respond. DELLA VIGNA [2009, pp. 361f.] and ELLISION [2006] provide examples.

Departures from the standard model of consumer behavior need not imply any need to integrate non-standard behavior into the models used to assess mergers. The conventional assessment of unilateral effects from mergers involving differentiated consumer products employs models in which firms choose prices to maximize profits in selling to consumers represented by an aggregate demand system (see WERDEN AND FROEB [2008]). BECKER [1962] showed that all that is required of consumer behavior for aggregate demand to have the properties that economic theory predicts (i.e., that market demand slopes downward) is that consumers are constrained to spend only what they have. The properties of the aggregate demand system are important to firms in setting their prices, but how individual consumers make decisions does not matter to them.

In estimating the parameters of the demand system from data on actual choices, merger assessment accounts for the actual decisions made in the marketplace, normally with high-frequency aggregate data collected at the point of sale. Biases in individuals’ choices do pose questions relating to estimation, and our tentative view is that choice biases can inject significant complications (see, e.g., GREEN AND BLAIR [1995]).

Finally, if behavioral research shows that consumers actually sometimes do act irrationally, competition policy nevertheless likely would do best by continuing to rely on neoclassical economic theory of consumer behavior.

Merger control attempts to implement a welfare standard (see WERDEN [2010]). As BERNHEIN AND RANGEL [2007] explain, irrational decision making by consumers destroys the analytic basis of welfare economics. Jettisoning the welfare foundations of competition policy would open the door to behavioral arguments for allowing mergers, and economists would be well compensated by merging firms for crafting such arguments.

For example, IYENGAR AND LEPPER [2000] find that individuals may dislike choice and so realize greater utility when presented with fewer options. As OLDALE [2010, p. 141] suggests, competition can exacerbate the problem by multiplying choices. This creates the possibility that consumers could benefit from a merger that both raises prices and reduces choice. But we expect enforcement agencies and courts to reject psychology-based challenges to the basic precepts of competition policy, even if some agencies and judges might appreciate the “greater degrees of freedom” they would have if they “departed from the rational choice model” (GINSBURG AND MOORE [2010, p. 97]).

8 Conclusions

Research mainly conducted by psychologists teaches that individuals make choices in ways that depart from the standard model used in economics. Insights from this research have been usefully applied in consumer protection since suggested by DYER AND SHIMP [1977] a generation ago. The United States is now attempting to implement the “libertarian paternalism” philosophy of THALER AND SUNSTEIN [2009]. They propose to identify common decision problems presenting individuals with significant difficulties, then use insights from psychology to “nudge” individuals toward making better decisions. Their philosophy is that individuals should have the freedom to choose, and market forces should allocate resources, but sometimes the government should help individuals make better choices.

If individuals do make better choices as a result of consumer protection policies based on learning from psychology, an added benefit might be intensified competition. But few opportunities are presented in which to apply insights on individual decision making directly to competition policy, and the proponents of behavioral antitrust have not yet identified significant competition policy implications of biases in choices made by consumers. Our preliminary consideration of the issue suggests that assessments of mergers in consumer goods industries should continue to employ analyses firmly grounded in neoclassical economics, but the analysis sometimes can be enriched by integrating learning on individual decision making into demand models.

Proponents of behavioral antitrust are too quick to presume that business organizations behave just as behavioral research finds that individuals behave. In a few cases, the individuals under study were in the business world, as were some of their decisions, but the research has relied predominantly on laboratory experiments performed on students. Managers might be overconfident, and they do use heuristics when dealing with extremely complex problems, but they cannot be expected to exhibit most of the biases observed with individual

decision making. Moreover, competition policy affords few opportunities to nudge managers in ways that might avoid biased decisions, nor do proponents of behavioral antitrust propose to nudge them.

Proponents of behavioral antitrust suggest readjusting substantive rules of law, redefining burdens in litigation, and reshaping agency assessments, all on the basis of arguments involving departures from profit maximization. To the extent such departures are mistakes, proponents of behavioral antitrust propose to inject paternalism into competition policy, but that is antithetical to the fundamental idea of competition policy. To the extent these departures result from pursuit of non-profit objectives, proponents might identify good reasons for concern about particular forms of anticompetitive conduct, but they offer nothing to improve the identification of anticompetitive conduct. No adjustment in merger assessments should be made on the basis that firms sometimes merge because of mistaken expectations or because managers might pursue objectives other than profit. What matters in merger control are the likely effects of the mergers, not the motivations for them.

Agencies and courts embraced neoclassical economics and the assumption of profit maximization in competition cases because they provide organizing principles for establishing the basic contours of the law and a lens for examining the evidence in particular cases. Psychology can inform economics in important ways but cannot take the place of economics in competition policy.

References

- AL-NAJJAR, N., S. BALIGA, AND D. BESANKO [2008], "Market Forces Meet Behavioral Biases: Cost Misallocation and Irrational Pricing," *The RAND Journal of Economics*, 39, 214–237.
- ANDREONI, J. [1995], "Warm-Glow Versus Cold-Prickle: The Effects of Positive and Negative Framing on Cooperation in Experiments," *The Quarterly Journal of Economics*, 110, 1–21.
- ARIELY, D. [2010], *Predictably Irrational: The Hidden Forces that Shape Our Decisions*, HarperCollins Publishers: New York.
- ARMSTRONG, M., AND S. HUCK [2010], "Behavioral Economics as Applied to Firms: A Primer," *Competition Policy International*, 6(1), 3–45.
- BAUMOL, W. J. [1982], "Contestable Markets: An Uprising in the Theory of Industry Structure," *The American Economic Review* 72, 1–15.
- BECKER, G. S. [1962]. "Irrational Behavior and Economic Theory," *Journal of Political Economy*, 70, 1–13.
- [2002], Interview conducted by D. Clement, *The Region*, June, http://www.minneapolisfed.org/publications_papers/pub_display.cfm?id=3407, last visit August 20, 2010.
- BENNETT, M., J. FINGLETON, A. FLETCHER, L. HURLEY, AND D. RUCK [2010], "What Does Behavioral Economics Mean for Competition Policy?" *Competition Policy International*, 6(1), 111–137.
- BERNHEIN, B. D., AND A. RANGEL [2004], "Addiction and Cue-Triggered Decision Processes," *The American Economic Review*, 94, 1558–1590.
- AND — [2007], "Behavioral Public Economics: Welfare and Policy Analysis with Nonstandard Decision-Makers," pp. 7–77 in: DIAMOND AND VARTIAINEN (eds.) [2007].
- BORK, R. H. [1978], *The Antitrust Paradox: A Policy at War with Itself*, Basic Books: New York.
- BRANAS-GARZA, P. [2007], "Promoting Helping Behavior with Framing in Dictator Games," *Journal of Economic Psychology*, 28, 477–486.
- BRENNAN, T. J. [2009], "Behavioral Economics and Merger Enforcement: A Speculative Guide," *Threshold* (Newsletter of the American Bar Association Mergers and Acquisitions Committee), 9(2), 21–29
- BUCCIROSSI, P. (ed.) [2008], *Handbook of Antitrust Economics*, The MIT Press: Cambridge, MA.
- CALABRESI, G. [1970], *The Costs of Accidents: A Legal and Economic Analysis*, Yale University Press: New Haven, CT.
- CARLTON, D. W. [2008], "The Need to Measure the Effect of Merger Policy and How to Do It," *Antitrust*, 22(3), 39–42.
- CAMERER, C. F. AND D. LOVALLO [1999], "Overconfidence and Excess Entry: An Experimental Approach," *The American Economic Review*, 89, 306–318.
- AND U. MALMENDIER [2007], "Behavioral Economics of Organizations," pp. 235–281 in: DIAMOND AND VARTIAINEN (eds.) [2007].
- AND R. A. WEBER [2011], "Experimental Organizational Economics," forthcoming in: R. Gibbons and J. Roberts (eds.), *Handbook of Organizational Economics*, Princeton University Press: Princeton.
- CHAMBERLIN, E. H. [1948], "An Experimental Imperfect Market," *Journal of Political Economy*, 56, 95–108.
- CHIPTY T., AND C. M. SNYDER [1999], "The Role of Firm Size in Bilateral Bargaining:

- A Study of the Cable Television Industry,” *Review of Economics and Statistics*, 81, 326–340.
- COASE, R. [1960], “The Problem of Social Cost,” *The Journal of Law & Economics*, 3, 1–44.
- COMPTE, O., AND A. POSTLEWAITE [2004], “Confidence-Enhanced Performance,” *The American Economic Review*, 94, 1536–1557.
- COOPER, D. J., J. H. KAGEL, W. LO, AND Q. L. GU [1999], “Gaming Against Managers in Incentive Systems: Experimental Results with Chinese Students and Chinese Managers,” *The American Economic Review*, 89, 781–804.
- DAVIS, D. D., AND C. A. HOLT [1994], “Market Power and Mergers in Laboratory Markets with Posted Prices,” *The RAND Journal of Economics* 25, 467–487.
- DELLAVIGNA, S. [2009], “Psychology and Economics: Evidence from the Field,” *Journal of Economic Literature*, 47, 315–372.
- DIAMOND, P. AND H. VARTIAINEN (eds.) [2007], *Behavioral Economics and Its Applications*, Princeton University Press: Princeton.
- DIRECTOR, A., AND E. H. LEVI [1956], “Law and the Future: Trade Regulation,” *Northwestern University Law Review*, 51, 281–296.
- DYER, R. F., AND T. A. SHIMP [1977], “Enhancing the Role of Marketing Research in Public Policy Decision Making,” *Journal of Marketing*, 41, 63–67.
- ELLISON, G. [2006], “Bounded Rationality in Industrial Organization,” pp. 142–174 in: R. Blundell, W. Newey, and T. Persson (eds.), *Advances in Economics, Theory and Applications*, vol. 2, Cambridge University Press: Cambridge.
- FEDERAL TRADE COMMISSION [2005], Workshop on Estimating the Price Effects of Mergers and Concentration in the Petroleum Industry: An Evaluation of Recent Learning, January 14, <http://www.ftc.gov/ftc/workshops/oilmergers/index.shtm>, last visit August 20, 2010.
- FRIEDMAN, M. [1953], “The Methodology of Positive Economics,” pp. 3–43: in M. Friedman, *Essays in Positive Economics*, The University of Chicago Press: Chicago.
- FONSECA, M. A., AND H.-T. NORMANN [2008], “Mergers, Asymmetries and Collusion: Experimental Evidence,” *The Economic Journal*, 118, 387–400.
- GINSBURG, D. H., AND D. W. MOORE [2010], “The Future of Behavioral Economics in Antitrust Jurisprudence,” *Competition Policy International*, 6(1), 89–102.
- GODE, D. K., AND S. SUNDER [1993], “Allocative Efficiency of Markets with Zero-Intelligence Traders: Markets as a Partial Substitute for Individual Rationality,” *Journal of Political Economy*, 101, 119–137.
- GREEN, D. P., AND I. V. BLAIR [1995], “Framing and the Price Elasticity of Private and Public Goods,” *Journal of Consumer Psychology*, 4, 1–32.
- GUL, F., AND W. PESENDORFER [2004], “Self-Control and the Theory of Consumption,” *Econometrica*, 72, 119–158.
- HOFFMAN, E., K. MCCABE, AND V. L. SMITH [1996], “Social Distance and Other-Regarding Behavior in Dictator Games,” *The American Economic Review* 86, 653–690.
- HUCK, S., K. A. KONRAD, W. MÜLLER, AND H.-T. NORMANN [2007], “The Merger Paradox and Why Aspiration Levels Let It Fail in the Laboratory,” *The Economic Journal*, 117, 1073–1095.
- , S., H.-T. NORMANN, AND J. OECHSSLER [2004], “Two Are Few and Four Are Many: Number Effects in Experimental Oligopolies,” *Journal of Economic Behavior & Organization*, 53, 435–446.
- IYENGAR, S. S., AND M. R. LEPPER [2000], “When Choice is Demotivating: Can One Desire Too Much of a Good Thing?” *Journal of Personality and Social Psychology*, 79, 995–1006.

- JOLLS, C. [2007], "Behavioral Law and Economics," pp. 115–145 in: DIAMOND AND VARTIAINEN (eds.) [2007].
- , C. R. SUNSTEIN, AND R. THALER [1998], "A Behavioral Approach to Law and Economics," *Stanford Law Review*, 50, 1471–1550.
- KAHNEMAN, D., AND A. TVERSKY [1979], "Prospect Theory: An Analysis of Decisions under Risk," *Econometrica*, 47, 263–291.
- LEVITT, S. D., AND J. A. LIST [2007], "Viewpoint: On the Generalizability of Lab Behaviour to the Field," *Canadian Journal of Economics*, 40, 347–370.
- MARES, V., AND M. SHOR [2008], "Industry Concentration in Common Value Auctions: Theory and Evidence," *Economic Theory*, 35, 37–56.
- MARSHALL, T. [1972], Concurring Opinion in *United States v. Falstaff Brewing Corp.*, 410 U.S. 526, 545–572.
- NASH, J. [1950], "The Bargaining Problem," *Econometrica*, 18, 155–162.
- [1953], "Two-Person Cooperative Games," *Econometrica*, 21, 128–140.
- NORMANN, H.-T., B. RUFFLE, AND C. SNYDER [2007], "Do Buyer-Size Discounts Depend on the Curvature of the Surplus Function? Experimental Tests of Bargaining Models," *The RAND Journal of Economics*, 38, 747–767.
- OLDALE, A. [2010], "Behavioral Economics and Merger Analysis," *Competition Policy International*, 6(1), 139–143.
- PELEG, B., AND P. SUDHÖLTER [2007], *Introduction to the Theory of Cooperative Games*, 2nd edition, Springer: Berlin.
- PLOTT, C. R., AND K. ZEILER [2007], "Exchange Asymmetries Incorrectly Interpreted as Evidence of Endowment Effect Theory and Prospect Theory," *American Economic Review*, 97, 1449–1466.
- POSNER, R. A. [1976], *Antitrust Law: An Economic Approach*, The University of Chicago Press: Chicago.
- [1979], "The Chicago School of Antitrust Analysis," *University of Pennsylvania Law Review*, 127, 925–948.
- [2007], *Economic Analysis of Law*, 7th edition, Aspen Publishers: New York.
- RABIN, M. [1998], "Psychology and Economics," *Journal of Economic Literature*, 36, 11-46.
- [2002], "A Perspective on Psychology and Economics," *European Economic Review*, 46, 657-685.
- REEVES, A. P. [2010], "Behavioral Antitrust: Unanswered Questions on the Horizon," *The Antitrust Source*, 9(5), <http://www.abanet.org/antitrust/at-source/10/06/Jun10-Reeves6-24f.pdf>.
- AND M. E. STUCKE [2010], "Behavioral Antitrust," <http://ssrn.com/abstract=1582720>.
- ROTH, A. E., P. VESNA, M. OKUNO-FUJIWARA, AND S. ZAMIR [1991], "Bargaining and Market Behavior in Jerusalem, Ljubljana, Pittsburgh, and Tokyo: An Experimental Study," *The American Economic Review*, 81, 1068–1095.
- RUBINSTEIN A. [2003], "Economics and Psychology? The Case of Hyperbolic Discounting," *International Economic Review*, 44, 1207–1216.
- SCHMALENSEE, R. [1989], "Inter-Industry Studies of Structure and Performance," pp. 951–1109 in: R. Schmalensee and R. Willig (eds.), *Handbook of Industrial Organization*, vol. 2, North-Holland: Amsterdam.
- SHAVELL, S. AND A. M. POLINSKY (eds.) [2007], *Handbook of Law and Economics*, vol. 1, North-Holland: Amsterdam.
- SMITH, V. L. [1991], "Rational Choice: The Contrast between Economics and Psychology," *Journal of Political Economy*, 99, 877–897.
- STUCKE, M. E. [2007], "Behavioral Economists at the Gate: Antitrust in the Twenty-First

- Century,” *Loyola University Chicago Law Journal*, 38, 513–591.
- SUNSTEIN, C. R. (ed.) [2000], *Behavioral Law and Economics*, Cambridge University Press: Cambridge.
- THALER R. H. AND C. SUNSTEIN [2009], *Nudge: Improving Decisions about Health, Wealth, and Loss Aversion*, Penguin Books: London.
- TOR, A. [2002], “The Fable of Entry: Bounded Rationality, Market Discipline, and Legal Policy,” *Michigan Law Review*, 101, 482–568.
- [2003], “Illustrating a Behaviorally Informed Approach to Antitrust Law: The Case of Predatory Pricing,” *Antitrust*, 18(1), 52–59.
- AND W. J. RINNER [2010], “Behavioral Antitrust: A New Approach to the Rule of Reason after *Leegin*,” *University of Illinois Law Review*, forthcoming.
- U.S. DEPARTMENT OF JUSTICE AND FEDERAL TRADE COMMISSION [2006], “Commentary on the Horizontal Merger Guidelines,” <http://www.justice.gov/atr/public/guidelines/215247.pdf>, last visit August 20, 2010.
- WERDEN, G. J. [2009], “Economic Reasoning in Merger Cases and How Courts Should Evaluate It,” *European Competition Journal*, 5, 701–720.
- [2010], “Consumer Welfare and Competition Policy,” forthcoming in: J. Drexler and W. Kerber (eds.), *The Economic Approach to Competition Law: Foundations and Limitations*, Edward Elgar Publishing: Cheltenham.
- AND L. M. FROEB [1998], “The Entry-Inducing Effects of Horizontal Mergers: An Exploratory Analysis,” *The Journal of Industrial Economics*, 46, 525–543.
- AND — [2008], “Unilateral Competitive Effects of Horizontal Mergers,” pp. 43–104 in: P. Buccirossi (ed.), *Handbook of Antitrust Economics*, The MIT Press: Cambridge, MA.
- , —, AND D. T. SCHEFFMAN [2004], “A *Daubert* Discipline for Merger Simulation,” *Antitrust*, 18(3), 89–95.