THE MARKET, THE FIRM, AND BEHAVIORAL ANTITRUST

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The Market, the Firm, and Behavioral Antitrust

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Abstract. This Handbook chapter examines the main distinct concerns facing the application of empirical behavioral evidence to antitrust law and economics—also known as "behavioral antitrust." More than many (though not all) other legal fields, antitrust law is primarily concerned with the conduct of firms in markets rather than in individual behavior per se. Yet much of the empirical evidence that behavioral antitrust draws on concerns individual behavior outside the firm, often in non-market settings. Hence besides adducing additional, direct empirical evidence on behavioral phenomena within firms and markets, there is a need to determine when and how the behavioral evidence on human judgment and decision behavior more generally is informative for antitrust. To this end, the chapter considers the ways in which markets and firms shape behavior. Direct evidence and theoretical analysis both reveal these institutions variously to facilitate rationality and deviations from it. After illustrating the implications of the complex interaction among markets, firms, and the rationality of antitrust actors across different areas of the law and enforcement policy, the chapter concludes by sketching some important open questions and future research directions in behavioral antitrust.

1. Introduction

Although one legal scholar considered the implications of a psychological phenomenon for antitrust law already in the 1980s (Gerla 1985), the more systematic development of a behavioral approach in this field dates back only to the turn of the 21st century (Aviram and Tor 2004; Tor [2002, 2003, 2004]), some years after behavioral law and economics already had made significant inroads in many others legal fields (Jolls et al. 1998; Langevoort 1998). Even then, perhaps due to the dominance of rationality-based law and economics in antitrust, the behavioral approach took significant additional time to garner broad attention in the field (Leslie 2009). Yet behavioral antitrust became increasingly popular and hotly debated more recently, once commentators began recognizing the inevitable and significant antitrust challenge posed by robust findings of systematic and predictable deviations from strict rationality (Stucke 2010).

Some enthusiastic proponents of behavioral antitrust depict it as a wholesale alternative to traditional antitrust law and economics (e.g., Horton 2011; Stucke 2013),

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while vocal detractors criticize the approach on numerous grounds (Wright and Stone 2012). A closer examination reveals, however, that both extreme positions in the behavioral antitrust debate are mistaken. Thus a better understanding of antitrust actors' behavior indeed can advance policy and doctrine, but does not offer a complete substitute for the accepted economic analysis of antitrust law. Moreover, beyond the familiar arguments surrounding the application of behavioral evidence to the law more generally (Mitchell 2002; Tor 2008), behavioral antitrust faces an additional set of external validity challenges, shared by only a few other legal fields (Arlen 1998). While antitrust law primarily addresses the behavior of firms in market settings, much of the empirical evidence that the behavioral approach draws on concerns individual behavior outside the specific institutional environment of the firm, often in non-market settings.

The centrality of markets and firms in antitrust means that behaviorally-informed analyses of antitrust law must account for the effects of these institutions on the rationality of antitrust actors. Yet in practice scholars frequently either ignore such institutional effects altogether (Huffman 2012) or simply assume, without more, that they guarantee the rationality of all the antitrust-relevant conduct of firms in markets (Werden, Froeb and Shor 2011, Wright and Stone 2012). In reality, however, markets and firms facilitate rationality in many circumstances but inhibit or fail to promote it on other occasions. Hence both commentators who disregard their powerful effects altogether and those who unquestioningly rely on firm and market institutions always to produce rational behavior inevitably reach some erroneous antitrust conclusions.

This chapter begins by explaining the centrality of hypothetical, strict rationality in antitrust, then examines the complex interplay of markets, firms, and the degree of rationality manifested by real antitrust actors. The implications of this interplay for antitrust doctrine and policy in areas ranging from horizontal and vertical restraints of trade, through monopolization, to merger enforcement practices follows. The chapter concludes by outlining some important open questions and future research directions for antitrust at the interaction of firms, markets, and rationality.

2. Antitrust and Rationality

Present day antitrust—perhaps more than any other legal field—is based on the traditional economic assumption that all market participants are rational decision makers. The firms whose market behavior is the focus of the field are assumed to be perfectly rational competitors that make strictly rational judgments and whose decisions seek always and only to maximize profits (Areeda and Hovenkamp 2006). Moreover, the microeconomic model of competition that the law relies on assumes that consumers are rational actors as well (Werden and Froeb 2008).

The rationality assumption also has concrete legal manifestations throughout antitrust doctrine and enforcement policy. In the United States, for example, the Supreme Court made the legal standard for allegations of illegal monopolization by predatory pricing under Section 2 of the Sherman Act nearly insurmountable by relying on the

rationality assumption in *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 519 U.S. 209 (1993). The Court declared that conduct will not amount to predatory pricing unless the alleged scheme involved pricing below some measure of cost and the predator had a rational prospect of recouping its losses. *Brooke Group* then concluded that predatory pricing schemes only rarely are tried and even more rarely are successful. According to this view, for recoupment to be likely the predator *inter alia* must have a very large market share that is protected by significant entry barriers. However, because few alleged predators meet the former condition and few markets the latter, *Brooke Group* concluded that price predation rarely occurs. Hence the Court declared that predatory pricing allegations can be rejected summarily in the common case of unlikely recoupment. The same rationale was applied by the Court more recently in *Weyerhaeuser Co. v. Ross-Simmons Hardwood Lumber Co.*, 549 U.S. 312 (2007), to reject allegations of predatory bidding, because "a rational firm would not willingly suffer definite, short-run losses" without "a reasonable expectation" of recoupment. More generally, the *Weyerhaeuser* Court noted that a "rational business will rarely make th[e] sacrifice" involved in such predation (id., p. 323).

Importantly, the Court's reliance on the rationality assumption to shape antitrust doctrine is not limited to Section 2 predation. A few years prior to *Brooke Group*, for instance, the Court in *Matsushita Electric Industrial Co. v. Zenith Radio Corp.*, 475 U.S. 574 (1986) summarily rejected allegations of a predatory horizontal conspiracy once it determined that maintenance of the conspiracy would have required the alleged conspirators to behave irrationally according to traditional economic models. Assumptions of rationality on the part of firms and consumers alike also have played a role in the Court's Section 1 jurisprudence with respect to vertical restraints between manufacturers and their distributors—such as tying arrangements and resale price maintenance (Tor and Rinner 2011)—and impact antitrust enforcement when the agencies evaluate whether proposed mergers are likely substantially to lessen competition under Section 7 of the Clayton Act (Werden and Froeb 2008).

Models based on assumptions of strict rationality clearly are pervasive in antitrust law, shaping a variety of doctrines across the field and playing a role in merger policy. The extensive behavioral evidence of bounded rationality therefore poses an obvious challenge to present day antitrust, suggesting that some doctrines and enforcement practices may require reevaluation, possibly revision. Yet before calling upon antitrust to account for bounded rationality, the behavioral approach must address a basic question of external validity (Tor 2008). After all, the bulk of the behavioral evidence concerns individuals and often involves non-market behavior. Potentially, therefore, the otherwise extensive evidence of systematic and predictable deviations from standard rationality on the part of individuals may not apply to the conduct of firms and their consumers, in market settings.

The response of behavioral antitrust to these external validity concerns is twofold. Analysts should draw as much as possible on both experimental and observational studies of firm and market behavior, thereby reducing the need to extrapolate from more general

behavioral findings. More direct, quantitative evidence of antitrust-relevant behavior on the part of firms is extremely limited, however. Antitrust scholars must therefore judge the external validity of extant behavioral findings also by examining carefully the processes through which markets and firms variously promote and inhibit rationality and the implications of these processes for antitrust analysis, a task to which we now turn.

3. The Market

Markets often promote more rational behavior by consumers and firms, but can also allow and even facilitate some forms of bounded rationality.

3.1 Consumers in the Market

When markets offer good information, consumers' judgments and decisions may be more accurate and better aligned with their preferences than in non-market settings. The available evidence, however, paints a complex picture. For one, the products and services that consumers must choose among do not always justify a commitment of significant time, cognitive, or financial resources to make optimal judgments and decisions, so consumers rationally ignore some relevant information. Producers who expect to benefit from consumers' educated choices may respond by providing relevant information to consumers via advertising campaigns, marketing, and similar efforts. Such responses not only tap the superior information that producers already possess about their products and services, but also offer significant economies of scale, given the low cost of offering the similar information to many consumers (Stigler 1961). Nevertheless, insofar as numerous competing producers offer such information, consumers still must determine which products and services best match their preferences.

Moreover, despite the increasing abundance of information—and occasionally because of it—many consumers still commonly and routinely make product and service choices that are suboptimal for them. Even when competition is present, producers in some markets prefer to offer only partial or opaque information to limit the ability of consumers to evaluate their products. Specifically, producers can benefit by designing products that lead more naive consumers to make inferior, costly decisions—as in the case of some credit card plans—that both increase producers' profits and subsidize the superior products chosen by more sophisticated consumers, helping attract the latter as well (Bar-Gill 2012; Gabaix and Laibson 2006). In other instances, firms may develop products that are more complex than necessary—such as where certain cellular service plans are concerned—making it exceedingly difficult to compare their offerings (Ayal 2011; Bar-Gill 2012).

Markets thus often provide consumers abundant information that can facilitate better judgments and decisions, but consumers still face significant challenges. Insofar as the interests of producers and consumers are not fully aligned, the latter frequently are at a fundamental disadvantage compared to the former—who have the experience, opportunity, and resources needed to exploit at least some consumers.

Besides the role of information, one familiar argument is that markets make deviations from rationality irrelevant because they cancel out in the aggregate so that markets overall perform as if they were comprised of rational participants (Friedman 1953). This argument, however, fails to account for *systematic* deviations from rationality that bias market behavior in predictable and consistent directions and therefore do not cancel out in the aggregate (Tor 2002).

A different argument asserts that one can derive the main implication of traditional economic models of consumer behavior—namely, the negatively-sloping demand curve that associates higher prices with lower demand—without assuming rationality, only that consumers have some resource constraint (Becker 1962). Yet this insight is not particularly helpful for antitrust law, whose doctrine and merger enforcement policies both rely on assumptions of consumer rationality well beyond setting up negatively-sloping demand curves (Bennett et al. 2010; Werden et al. 2011). For example, antitrust analyses that ignore the "sticky" behavior of real-world consumer—who are more reluctant to switch among products than rationality-based models assume—may arrive at excessively broad market definitions that understate the market shares of merging firms.

3.2 Producers in the Market

Beyond providing them with incentives and opportunities to react to the bounded rationality of consumers, markets also help align producers' own behavior with rationality through a number of mechanisms.

Aggregation Mechanisms. Economists have long argued that markets overall may comport with the predictions of strictly rational models even while individual firms deviate from it when random errors cancel out in the aggregate. Nonetheless, we noted already that systematic deviations from rationality may not cancel out and instead generate broader market patterns that differ from predictions based on hypothetical rationality.

Similarly, Becker's argument regarding irrational consumer behavior extends to producers as well. Even firms who do not maximize profits must respond systematically to changes in their production opportunity set: As the price of inputs or the competitive conditions in the market change, even firms acting randomly, or those guided by inertia, respond accordingly. For instance, a competitive market that becomes monopolized will tend to lower output even when firms are irrational (Becker 1962). This observation is of limited antitrust significance, because it only states that markets with irrational firms generally move in the *direction* predicted by traditional models. However, antitrust law treats differently market behaviors with the same propensity—such as increase in price or a reduction in output—depending on the *magnitude* of change. In the United States, for instance, mergers among competitors are legal unless they are likely substantially to lessen competition, monopolization and attempted monopolization both apply only to firms above a certain market power threshold, and exclusive dealing, tying arrangements and some other restraints of trade similarly are prohibited for some firms yet permitted for others depending, inter alia, on their degree of market power. Similarly competition

law in the European Union prohibits only firms with sufficiently large market share from conduct that amounts to an abuse of their dominant position. In each case, therefore, markets that move in the same general direction will generate different legal results depending on the respective magnitude of change in market power. This change, however, may partly depend on the degree and nature of producers' rationality in a given market setting.

Even when evaluating market-wide outcomes, moreover, antitrust law ultimately is concerned with the conduct of specific firms. Yet such conduct and its competitive effects also depend on the degree to which the specific firm and other market participants adhere to the precepts of rational profit maximization. To illustrate, the same allegedly predatory conduct that could not harm competition in a world populated only by perfectly rational firms—say, because market conditions make recoupment of the costs invested in predation unlikely—can generate significant competitive harm where a real monopolist may be irrationally aggressive towards new entrants.

Selection Mechanisms. Competition among producers and the arbitrage activities of sophisticated actors help markets select for rationality. The competitive process may align producer behavior with rationality-based models by weeding out less capable and thus less profitable competitors who ultimately will not survive (Alchian 1950). Antitrust commentators frequently assume, in fact, that competition leads boundedly rational decision makers to deplete their resources by making inefficient decisions while their rational competitors enjoy consistently higher profits (Bailey 2010).

Yet this selection argument is of limited significance for antitrust analysis. For one, while competition may weed out those who consistently underperform, deviations from rationality are variable and heterogeneous (Mitchell 2003; Rachlinski 2000; Tor 2008). When decision makers exhibit different biases to different degrees at different times, even many of those who ultimately outperform their competitors may still differ substantially from the hypothetical rational actor. Even more significantly, competitive discipline penalizes only boundedly rational behaviors that reduce profitability, while promoting those that benefit market participants. For example, competitive selection punishes most some biased decision makers who take risks that their rational competitors avoid, yet rewards some fraction of the former with higher returns, so that these particular boundedly rational competitors outperform their rational peers (Tor 2002). In addition, antitrust focuses on less competitive markets that inevitably exert more limited disciplinary pressure on market participants. A monopolist in a market with significant entry barriers that limit the efficacy of competitive discipline, for instance, can dissipate some of its supra-competitive profits monopoly by operating less efficiently (Demsetz 1982; Libenstein 1980), whether due to systematic deviations from rationality or for other reasons.

Arbitrage by rational actors who identify, exploit, and consequently erode the profit opportunities generated by the errors of boundedly rational decision makers may also help select for producer rationality. But effective arbitrage necessitates a sufficiently

large group of market participants who can identify the opportunity and bear the risks and costs involved with selling to or buying from their boundedly rational counterparts. It also requires the availability of substitutes for the products that boundedly rational actors over- or underprice. These conditions rarely exist even in sophisticated financial markets, however, not to mention real product markets (Shleifer 2000).

Firm-Level Mechanisms. The rationality of specific market participants—as distinct from those market-level outcomes generated by aggregation and selection mechanisms—also can be material for antitrust analysis. Before turning in the next section to study those intra-firm mechanisms of rationality, the following paragraphs consider two related mechanisms that impact the firm overall, as a single unit of production in the market.

First, producers in markets primarily aim at earning profits and for this reason alone should be more rational as they try to avoid errors that plague decision makers outside markets. Indeed, the notion that monetary incentives matter and that larger incentives lead to greater effort and better performance is near axiomatic in traditional economics. Yet the empirical evidence suggests this is not always the case: At least where individual decision makers are concerned, financial incentives can increase effort but generate only limited improvements in intuitive judgment and decision behavior, at times even diminishing performance (Camerer and Hogarth 1999; Gneezy and Rustichini 2000). Producers' increased competitive efforts also may be directed at goals other than pure profit maximization, such as obtaining a larger share of or relative position in the market (Armstrong and Huck 2010).

Second and related, boundedly rational producers must learn to correct their mistakes if they are to improve their performance. Effective learning requires firms to identify judgment and decision errors, to associate these errors with specific negative consequences, and finally to replace them with more rational behaviors (Tversky and Kahneman 1986). However, in typical antitrust settings, such learning can be exceedingly difficult. Most judgments and decisions in product markets are made under uncertainty; outcomes are multiply-determined and delayed; feedback is limited and noisy; and there is no reliable information about the counterfactual outcomes that would have occurred had a different choice been made. Over time and with experience producers nevertheless can improve their performance even without actual learning. They may imitate successful competitors, follow established industry norms, or seek the advice of consultants with expertise in improving business outcomes. But such efforts may not always align the producers' conduct with strict rationality. Imitation may be directed at the wrong aspects of competitors' conduct, industry norms may not be rational or efficient, and to seek and to invest resources in procuring outside advice—not to mention follow it successfully—firms must first recognize their suboptimal conduct. Finally, if the challenges involved in learning from experience in product markets were not enough, many of the most significant judgments and decisions from an antitrust perspective are infrequent, sometimes unique. Entry into new markets, mergers and acquisitions, the development of new business strategies and vertical arrangements, and similarly uncommon decisions, all offer producers only limited learning opportunities.

The various mechanisms of market rationality thus constrain some deviations from strict rationality, partly confirming the common intuition that producers are more likely than consumers to behave rationally. At the same time, the rationality-promoting effects of aggregation, selection, profit-seeking, and learning are more limited than legal analysts typically recognize, particularly in those antitrust-relevant market settings.

4. The Firm

In addition to the effects of markets, the judgment and decision behaviors of firms and their managers are shaped by intra-firm institutional mechanisms as well. Indeed, much like the various economic advantages of firms over individual contracting in the market that the economic theory of the firm highlights (Alchian and Demsetz 1972; Coase 1937; Jensen and Meckling 1976; Williamson 1971), one might expect firms also to exhibit superior rationality compared to individuals. After all, most firms that antitrust law is concerned with are large business organizations that can recruit expert agents to manage them; draw on organizational routines based on extensive experience to guide the behavior of managers and, even more so, to direct the conduct of lower-level employees within the organization; use sophisticated governance arrangements to align managers' judgments and decisions with the interests of the firm; and use corporate boards—groups of experienced directors who can direct, monitor, and discipline managers.

Nonetheless, the empirical evidence on managerial and firm behavior—both generally and with respect to important antitrust-relevant tasks in particular—reveals a more complex picture. While managers are sophisticated and experienced professionals, they still are human. As amply illustrated by the growing literature on behavioral corporate finance, these corporate decision makers are selected and shaped by institutional forces to manifest greater rationality in some respects but systematic bias in others. In the same vein, the corporate governance literature demonstrates the fundamental limits of the main intra-firm governance mechanisms that may promote rationality, from contractual arrangements to corporate boards.

4.1 Managers in the Firm

Business managers may be more rational in their judgment and decision behavior than other individuals because of their expertise (Engel 2010). Research shows that in some fields experts outperform individuals who do not have domain-specific expertise. But as explained below the evidence also reveals that experts often make mistakes that resemble those of other individuals where the rationality of judgment and decision behavior specifically is concerned.

Managerial Expertise. The main factors that determine experts' performance—besides the extent of their experience and their subject-matter expertise—are the nature of the task and the decision environment. The learning processes that help experts develop more rational behavior resemble those that individuals employ for learning more generally. When feedback is clear and readily available—as in weather forecasting—

experts can perform well even in the face of an uncertain environment. But in many other domains—particularly where feedback is limited and ambiguous—experts frequently do not exhibit more rational behavior than non-experts. Thus, experts require high-validity environments, in which cues are informative, and an adequate opportunity to learn if they are to act more rationally and develop "skilled intuition" (Kahneman and Klein 2009).

Unsurprisingly, therefore, numerous studies reveal systematic judgment and decision errors by experts, even while these more experienced, sophisticated actors outperform non-experts in some settings. In fact, a leading researcher in the field recently noted that some of his earliest collaborative studies of biases that result from people's reliance on intuitive, heuristic-based, judgment used experts in statistics as participants (Kahneman 2011). Other evidence shows systematic biases in the clinical judgments made by physicians and various other health professionals (Arkes et al. 1981; Chapman and Chapman 1969; McNeil et al. 1982). Furthermore, studies reveal a variety of systematic judgment and decision errors by business and finance professionals, from veteran accountants and real estate brokers, to investment managers, options traders, and financial planners (Joyce and Biddle 1981; Olsen 1997; Fox et al. 1996; Roszkowski and Snelbecker 1990). These latter findings indeed are unsurprising, given the limited and ambiguous nature of the feedback that business decision makers frequently face.

Intra-Firm Selection. One might hope for a further alignment with rational models on the part of corporate managers due to selection effects. The managers whose behavior is most relevant for antitrust purposes are not only business experts; they belong to a smaller, more select group that reaches top posts on the corporate ladder presumably based on their superior performance, and may thus also be more rational. Theory and evidence both suggest, however, that managerial selection is of limited efficacy here, in part echoing the limits of market-level selection discussed above. Yet some mechanisms of rationality are even more constrained or altogether irrelevant where managers are concerned. After all, managerial behavior is a matter of individual rather than aggregate rationality. And managerial rationality is an even less likely target for successful arbitrage than firm-level conduct in product markets.

Moreover, managerial competitions at best reward those performance elements that most closely correlate with the firm's long-run profitability. Because rationality only partly correlates with the firm's success, effective competitive selection within the firm will promote managers who exhibit some systematic deviations from rationality. For instance, successful managers may benefit from a reputation for consistency and commitment, which can lead them to take into account sunk costs that rational actors would disregard (Shaw 1997).

Similarly, managerial tournaments may promote overconfidence—a term denoting a cluster of loosely-related deviations from rational judgment (Glaser and Weber 2010). For example, overconfident managers may persevere in difficult situations, exhibit greater ambition and confidence in their performance, and disproportionately attribute

their successes to their own prowess over luck. The characteristics, however, may make such managers more attractive to the firm than their unbiased peers and thus more likely to be selected for top positions. Of course, overconfidence is not always beneficial for managers or firms. Some behavioral corporate finance studies show, for example, that banks with overconfident CEOs take greater risks than their peer institutions (Niu 2010), and top-performing mutual fund managers tend to trade more following success and exhibit worse performance when they do so (Puetz and Ruenzi 2011). Studies further show that managerial overconfidence distorts both investment and financing decisions at the firm level (Malmendier and Tate 2005); helps explain the volume, type, and financing of mergers and acquisitions activity (Ferris et al. forthcoming); and is even linked to aggressive accounting and an increased likelihood of financial misreporting (Ahmed and Duellman 2012; Schrand and Zechman 2012).

Thus both theory and the rapidly accumulating evidence show that behavioral phenomena like managerial overconfidence exert significant, measurable effects on firm-level conduct in the market. Apparently, intra-firm competition does not eliminate all deviations from strict rationality and can even promote some of them.

4.2 Intra-Firm Institutions

Organizational Repairs. Managers also may be more rational specifically because they operate within firms. First, when firms have the time and means to learn from experience and repeated feedback, they can develop "organizational repairs"—that is, internal procedures and rules that aim to overcome systematic individual shortcomings. The management literature provides anecdotal illustrations, for example, of organizations using maxims intended to remind employees not to make biased attributions, utilizing strategies aimed at collecting sufficient, relevant information, and developing methods for evaluating their information and hypotheses more objectively (Heath et al. 1998).

Nevertheless, organizational repairs have limited success and largely are unpredictable, tending to be most efficacious when based on bottom-up learning within the firm in a specific domain. These characteristics may resemble some of the tasks required of lower or mid-level employees in many firms. They do not apply, on the other hand, to many significant antitrust-relevant tasks that managers face, such as when they need to make judgments and decisions regarding the firm's overall pricing strategy, alliances with actual or potential competitors, mergers and acquisitions, and more. Such judgments and decisions are made infrequently, by top management, and usually offer limited, noisy feedback, all of which characteristics make organizational repairs unlikely.

Agency. Additionally, managers may approximate rational action simply because they function as the firm’s agents. There is some evidence that agents who operate on behalf of others act more rationally than individuals acting on their own behalf. The endowment effect—wherein individuals value entitlements they possess more highly than identical ones they do not hold (Korobkin 2013)—was not manifested by experimental participants taking the role of agents and transacting on behalf of their principals (Arlen et al. 2002). Behavioral evidence also suggests that egocentric biases are less likely to impact

judgments made on behalf of others, at least insofar as the agent has not adopted the principal's perspective (Tor 2002).

The better alignment of agents' judgment and choice with rationality, however, would be of limited assistance to managers in overcoming those judgment and decision errors they still manifest with respect to major corporate decisions. For one, the limited evidence of agents' increased rationality still pertains to but a few of the relevant behavioral phenomena. In addition, agents' rationality advantage does not apply to most antitrust-relevant managerial tasks. The experimental elimination of agents' endowment effect, for example, was driven by participants' framing of the entitlements they traded based on the exchange value of these entitlements (Kahneman et al. 1990; Koszegi and Rabin 2006). The impact of loss aversion on key antitrust-relevant decisions, on the other hand, concerns the managers' own strategic decisions about the overall course of the firm rather than to entitlements such as goods held by the firm for routine transactions. Agents' advantage regarding egocentric biases similarly is unlikely to pertain to judgments of their own managerial ability and expertise. Similar limitations apply more generally, whenever managers' judgments and decisions regarding their own abilities, plans, and performance are involved.

Corporate Boards and Governance. Corporate managers nonetheless may exhibit superior performance because they make most significant judgments and decisions in a group of top managers or the corporate board of directors, with the benefits of multiple viewpoints, cumulative experience, and deliberation.

Despite this claim's intuitive appeal, however, the empirical evidence does not show boards (or top management groups) are reliably likely to avoid those systematic decision errors that plague individual managers. Small-groups outperform individual rationality in some cases but at other times exhibit similar or even more extreme judgmental biases and decision errors, with their ultimate performance largely dependent on case-specific variables (Hill 1982; Kerr et al. 1996; Tindale et al. 2003).

Beyond their limited capacity to meliorate individuals' errors, some common characteristics of group decision making—most notably deliberation—often cause additional, group-level biases (Berg et al. 1995). Groups may exhibit groupthink, promoting an erroneous consensus that does not reflect the information held by individual group members. Their deliberations, instead of leading to a superior integration of group members' information and perspectives, can also cause group polarization, so that the resulting collective view of the group is more extreme than the individual members' pre-deliberation tendencies. Hence, while senior management's collective judgment and decision making can and will sometimes manifest superior performance, there is little reason to believe they will approximate the predictions of rational models across the board.

Finally, the extensive corporate governance scholarship suggests that in reality corporate boards possess limited efficacy in disciplining and monitoring managers (Adams et al. 2010; Hermalin and Weisbach 2003) and often are dominated by CEOs

(Bebchuk and Fried 2004). Therefore, even with the gradual shift in recent years towards increased board power at the expense of management, corporate boards are unlikely to shape many of senior management's significant, antitrust-relevant judgments and decisions, except in some extreme cases. The rationality advantages of boards, if any, will thus impact managerial behavior only to a limited degree where behavioral antitrust is concerned.

5. Behavioral Antitrust

Behavioral antitrust draws on evidence suggesting that real, boundedly-rational market participants deviate systematically from the predictions of the rationality-based economic models that antitrust law currently relies on. In some cases, scholars further argue that these deviations warrant changes in antitrust doctrine or enforcement policy. This section draws on some of these analyses, across different areas of antitrust law, illustrating how behavioral antitrust can and should account for those manifestations of bounded rationality that markets and firms allow and sometimes even facilitate.

5.1 The Market and Behavioral Antitrust

Firms Exploiting Boundedly Rational Consumers*: *Aftermarket Power, Bundling and Tying. One of the claims commonly made by scholars applying behavioral findings—whether those who support behavioral antitrust or oppose it—is that the exploitation of boundedly rational consumers by sophisticated firms may raise antitrust concerns (Ginsburg and Moore 2010; Huffman 2012; Reeves and Stucke 2011). In particular, commentators make such arguments with respect to aftermarket power and in the case of bundling and tying practices.

The behavioral aspects of aftermarket power analysis have been raised, at least implicitly, by the United States Supreme Court in *Eastman Kodak Co. v. Image Technical Services, Inc.*, 504 U.S. 451 (1992), which affirmed the denial of summary judgment to the defendant, a manufacturer of business copiers. The plaintiffs alleged that Kodak's requirement that buyers of its machines service the copiers exclusively with the manufacturer's original parts amounted to illegal tying under Section 1 and monopolization under Section 2 of the Sherman Act.

The *Kodak* dissent argued for summary judgment based on the assumption that consumers of copiers are rational decision makers. In the face of rational consumers, a competitive market in copiers necessarily prevents Kodak from exercising power in the sale of parts for its own machines, even if consumers who already possess Kodak machines are "locked-in" to using these parts. The dissent reasoned that any increase in the price of parts and services in the aftermarket that sought to exploit the power resulting from lock-in would effectively make Kodak's machines more costly in the competitive primary market for copiers. Rational consumers, who take into account the future costs of parts and services over the copier's lifetime, would find the machines less attractive.

Yet if this were the case, Kodak could not charge higher prices for parts, because that would entail losing copier sales to competitors in the primary market.

This rationality-based argument was rejected, however, by the Court's majority that ruled Kodak could have exercised power in the aftermarket for the sale of machines parts even while the primary market for copiers was competitive. The majority's position can be explained on behavioral grounds. Though perfectly rational consumers in the primary market would have sufficed to deter Kodak from exploiting its aftermarket power, the same does not necessarily hold for boundedly rational consumers who do not incorporate all the future costs of parts over the copiers' lifetime into the primary market price. Importantly, the majority's conclusion did not require a positive finding that Kodak in fact exercised power in the parts aftermarket, since the Court only affirmed the denial of summary judgment by the court of appeals. Kodak's actual aftermarket power depended on the proportion of those myopic consumers who do not take future costs effectively into account (Bar-Gill 2012, 2013)) versus their sophisticated counterparts (who do account for future costs), as well as on the intensity of competition from other copier manufacturers for primary market sales (Bennett et al. 2010).

Thus, even without fully examining the efficiency consequences of the tying of copier parts, *Kodak* clearly illustrates how markets can encourage firms to adopt different competitive strategies depending *inter alia* on the degree of bounded rationality manifested by their consumers. In such cases, antitrust cannot assume that primary market competition always will prevent the exploitation of aftermarket power, nor that the market inevitably will facilitate such exploitation. Instead, the plausibility of this conduct and its competitive consequences will depend on the circumstances of the specific market at hand.

Beyond aftermarket power, antitrust scholars argued that the vertical practices of product bundling and tying may exert more powerful effects on real consumers than traditional models acknowledge. For example, behavioral findings on consumer inertia, the endowment effect, and the impact of defaults on choice indicate that consumers may find it difficult to switch from one product to a competing one, even where the objective costs of switching are small. Indeed, both theoretical arguments and experimental tests suggest that rebate schemes and other loyalty programs have stronger effects on the behavior of real consumers than rationality-based models expect them to have (Beckenkamp and Maier-Rigaud 2006). Some analysts therefore argue that dominant firms can use bundling, tying and similar devices to foreclose competition more effectively than antitrust currently assumes (Bennett et al. 2010).

However, a more careful analysis of market dynamics suggests that the potential susceptibility of consumers to behavioral manipulation by firms will not always advantage monopolists or dominant firms. The stickiness of consumer behavior frequently redounds to incumbents' benefit because new entrants and smaller competitors may find it more difficult than standard models predict to attract consumers on the basis of lower price or higher quality alone. Yet sufficiently large multiproduct firms with a

small share in a given product market may profitably expend resources on shaping consumer behavior and, consequently, exert greater competitive pressure on incumbents than commentators tend to assume when faced with boundedly rational consumers.

The example of bundling and tying reveals, therefore, that the processes through which markets facilitate the exploitation of boundedly rational consumers by firms may sometimes benefit non-dominant as well as dominant firms. In these circumstances, some vertical practices that would have been unattractive to sellers in markets populated by rational consumers may turn out to be advantageous in real market settings.

Market Discipline with Boundedly Rational Entry. The competition among new entrants into markets illustrates how even when competition disciplines boundedly rational market participants, markets can generate outcomes that are very different from those predicted by rationality-based models. Consequently, the real social benefits and costs of entry and, importantly, its impact on incumbents' market power—a matter of importance for various areas of antitrust law—also differ from those that antitrust traditionally assumes. Potential entry plays an important role in merger assessments, for instance, because it can counteract the anticompetitive effects of increased market power, which might otherwise follow a horizontal merger (Horizontal Merger Guidelines 2010). More generally, with effective entry even firms with large market shares may not be able to exert their market power, an essential element of the antitrust violations of monopolization and attempted monopolization, tying, exclusive dealing, and other antitrust violations (Areeda and Hovenkamp 2006; Landes and Posner 1981).

Traditional antitrust models assume that entry will only take place when it maximizes entrants' profits, requiring it to have a positive risk-adjusted, net present value (Tor 2002). The empirical evidence on entry paints a very different picture, however, showing abundant excess entry that appears unjustified based on entrants' objective prospects of survival and profitability (Baldwin 1995). Studies further reveal two additional puzzling entry phenomena: For one, entry appears insensitive to some of the economic variables that predict future profitability, from the intensity of competition to certain entry barriers (Evans and Siegfried 1992; Geroski 1991). Startup entrants, moreover, not only fail more frequently, but do so to such an extent that they obtain lower expected payoffs and thus exhibit inferior average performance compared to diversifying entrants (Dunne et al. 1988, Dunne and Roberts 1989).

A behavioral analysis of entrants' judgments reveals, however, that the psychology of optimistic overconfidence can explain these three puzzling phenomena (Tor 2002). New entrants make their personally significant judgments of entry's prospects under conditions of extreme uncertainty so that a host of psychological processes leads them collectively to overestimate their prospects. These behavioral phenomena also reduce entrants' sensitivity to market predictors of success that should encourage or discourage entry, including the expected intensity of competition and certain entry barriers. Some of these psychological factors, moreover, exert a differential impact that makes startup entrants more biased when judging their entry prospects

compared to diversifying, experienced firms that already are successful in adjacent markets (Tor 2002).

The forces that shape entrants' judgments generate a competitive landscape that differs significantly from that envisioned by traditional antitrust models. Because all entry is not the same, the more biased and numerous startups fail at greater proportions than their diversifying competitors, yet are overrepresented among those few entrants who ultimately survive and prosper. Hence the same competitive market forces that serve to punish most competitors who overestimate their prospects can still fail to prevent biased entry more generally and may even attract it by producing those uncommon instances of exceptionally successful entrants who "made it big" against the odds. At the same time, insofar as new entry is associated with innovation, particularly for startups, the biases of entrants can also generate significant benefits to society writ large.

Where the longer-term impact of entry on incumbents is concerned, the behavioral analysis of entry suggests that even while entry often is not exceptionally difficult, post-entry success and survival are unlikely for the typical entrant. Most startups, and small entrants more generally, pose no short-term competitive threat to incumbents, but some large diversifying entrants possibly do. In the long run, however, the few successful boundedly rational innovative entrants are an important source of competitive pressure on incumbents. These outcomes have important implications for antitrust law and policy. For one, they support the law's hostility to unnecessary restrictions on new entry, given its important pro-competitive benefits. The law nonetheless should be wary of relying on findings of low entry barriers alone to guarantee competitive pressure on incumbents in the short-run, since most new entrants detract little from incumbents' market power except where those less-common diversifying entrants are concerned.

The Maintenance of Market Power: Bounded Rationality and Predation. This author and others identified circumstances where monopolists may engage in predatory behavior that fails to maximize profits and is therefore irrational according to the standard account (Gerla 1985; Tor 2003). For example, managers of a dominant firm that is losing market share may take excessive risks due to loss aversion, while managers of established, profitable incumbents may exhibit the opposite pattern of excessive risk avoidance. Analysts further offer evidence from antitrust cases of predatory behavior that appears irrational on traditional accounts (Leslie 2010), while others show how even rational monopolists may find it beneficial to imitate the behavior of their irrational counterparts when market participants know that some market participants may engage in irrational predation (Edlin 2012). In these cases, therefore, market dynamics may encourage behavior that initially seems to deviate from rationality rather than discourage such conduct.

Bounded Rationality and Unexploited Market Power. Some commentators argue that traditional models, such as those used to evaluate the unilateral effects of horizontal mergers, can overstate the harm created by newly acquired, substantial market power (Bailey 2010). They aver that real firms sometimes avoid fully exploiting their market

power, charging prices they deem "fair" instead of maximizing profits, thereby potentially justifying a more permissive approach to merger enforcement.

This argument may be compelling when market power is generated by recent, temporary changes in market conditions. In such cases, firms may not exercise their power fully, whether to maintain a reputation for offering low prices or to avoid negative reactions by consumers to prices the latter perceive as "unfair" (Kahneman et al. 1986). On the other hand, the powerful pressure towards greater profitability that markets and firms exert suggests that unexploited long-term market power for fairness concerns should be uncommon. For one, markets and firms may penalize managers who fail to extract value from patently available market power. The behavioral force of adaptation also suggests that customers—even those who initially view the exercise of market power as unfair—will tend to accept it as normal over time. Hence the same forces that militate against short-term exploitation of such power dissipate and allow, even support, the profitable exercise of market power in the longer run.

5.2 The Firm and Behavioral Antitrust

Privately Beneficial Bounded Rationality: Cartels. Where horizontal restraints among competitors are concerned, a number of scholars argue that behavioral forces increase the likelihood and stability of cartelization beyond what traditional antitrust theories suggest (Armstrong and Huck 2010; Leslie 2010). Traditional economic accounts consider cartels unlikely, for instance, where products are differentiated, competitors numerous, or entry barriers low. Cartels, moreover, should be inherently unstable, because cartel members find it most profitable to cheat on the cartel and—although they would all be better off with a cartel than without it—rational cartelists anticipate cheating by their counterparts and avoid cartelizing or abandon it quickly when cheating is hard to detect or difficult to enforce against. However, there are by now many examples of real-world cartels found in industries and product markets where they should not have existed and could not have thrived for extended periods according to traditional economic accounts (Armstrong and Huck 2010; Reeves and Stucke 2011). These ubiquitous cartels, for instance, spanned markets with large numbers of competitors, limited entry barriers, non-homogenous products with complex pricing and cost structures, and other characteristics that make cartelization unlikely for strictly rational actors (Levenstein and Suslow 2006; Stigler 1964).

Explaining the cartel evidence, commentators argue that behavioral factors, such as managers' social preferences for trust and cooperation, personal relationships, social networks and social norms all help competing firms establish and maintain collusive arrangements where rationality-based models that ignore these behavioral factors expect them to fail (Armstrong and Huck 2010; Bennett et al. 2010). Other researchers point to additional, non-social phenomena, such as managers' aspiration to obtain merely satisfactory profits, which makes the potential for secure profits through cartelization more attractive than for the traditionally-assumed profit-maximizing firm (Simon 1976; Dixon 2000). The influence of these various factors thus illustrates how some

characteristics that make individuals more effective managers or even just more successful in intra-firm competitions can also facilitate the creation and maintenance of cartels beyond what rationality-based models predict. Of course, firms benefiting from collusive arrangements also are unlikely to combat managerial behaviors that facilitate cartelization.

Other researchers argue to the contrary, however, that behavioral forces should destabilize collusion due to processes that traditional models ignore. For example, some studies of experimental markets show that an increase in the amount of information available to competitors about rivals' output and profits—which would make easier oligopolistic coordination by rational actors—can lead in fact to a less collusive, more competitive market behavior (Huck et al. [1999, 2000]; Offerman et al. 2002). Similarly, the broader behavioral literature makes clear that individuals' concern for relative—as opposed to absolute—outcomes is ubiquitous, particularly common in competitive settings (Garcia and Tor [2007, 2009]; Garcia et al. 2013), and evidenced in managerial behavior. Yet the concern for relative outcomes, if manifested by managers when making decisions on behalf of their firms, can sometimes destabilize cartels and make markets more competitive (Armstrong and Huck 2010), although it is difficult to obtain empirical evidence for such patterns in real-world markets.

The seemingly conflicting findings can be reconciled, however. As noted already, the behavior of antitrust actors is variable, heterogeneous, and shaped by market and firm institutions. Hence while some markets and firms may make collusion more likely than typically assumed, others may make it more difficult and less likely. More generally, however, beyond showing how specific firm and market characteristics may facilitate or inhibit collusion in ways that traditional models neglect, the behavioral evidence also reveals that established patterns of market behavior—whether competitive or collusive—exhibit greater stability than standard antitrust models assume. Extant rivals are slower to recognize and embark on mutually profitable opportunities for coordinated behavior—whether legal, collaborative arrangements or illegal cartelization—than rationality-based accounts allow for. At the same time, established collaborative or collusive arrangements are more stable than they would have been if the parties were strictly rational actors (Aviram and Tor 2004).

A number of factors combine to make market behavior "sticky." In the domain of judgment, established norms of rivalry diminish competitors' ability to identify profitable opportunities for cooperation and vice versa where collusive norms prevail. Managers' risk attitudes can also cause them to overestimate the value of extant arrangements and underestimate the benefits of alternative courses of interaction with rivals. Moreover, some decision phenomena—including the status quo bias (Zamir 2013) and the aversion to comparative ambiguity (Camerer and Weber 1992)—may lead competitors consciously to forego risky, profitable opportunities for collusion while also inhibiting cartelists' willingness to chance potentially profitable competitive alternatives to ongoing collusive arrangements (Aviram and Tor 2004).

Divergence of Private Benefits between Managers and their Firms: Mergers. Unlike those deviations from strict rationality that benefit both manager and firm and may therefore be allowed or even encouraged by intra-firm processes, other manifestations of bounded rationality may be costly to the firm. Firms might be expected to develop mechanisms that address such behaviors, yet the empirical evidence suggests they do not always do so, at least not effectively. When the private benefits to managers diverge from those of the firm, boundedly rational behavior may be viewed as another aspect of the familiar agency problem between the two parties (Easterbrook and Fischel 1991), which firms and the law both seek to minimize but cannot eradicate altogether.

With respect to merger policy, commentators draw on empirical evidence from the corporate finance literature as well as on some behavioral findings to note that many mergers prove inefficient rather than profit-maximizing as antitrust now assumes (Horton 2011; Reeves and Stucke 2011; Mueller 2003) and at least partly result from managerial overconfidence (Malmendier and Tate 2005; Roll 1986). Empirical studies found, for instance, that mergers often diminish rather than increase the market value of the acquiring firm, and behavioral research long has suggested that excess merger activity is likely driven *inter alia* by the optimistic overconfidence of managers (Moeller et al. 2005; Roll 1986). In a similar vein, scholars contend that merger-specific efficiencies—which parties proffer to show how transactions that raise competitive concerns generate benefits—are not only difficult to substantiate but often fail to materialize (Horizontal Merger Guidelines 2010; Oldale 2010; Ravenscraft and Scherer 2001).

Yet, even among those who note the prevalence of inefficient mergers, opinions diverge as to whether this systematic deviation from standard economic models matters for antitrust law. Some argue that an accounting for the overall efficiency of a proposed merger is outside antitrust's limited mandate to prevent only mergers "substantially likely to lessen competition" (Werden et al. 2011). They also aver that the antitrust agencies already are skeptical regarding claims of merger-specific efficiencies (Oldale 2010; Werden et al. 2011). Others counter that the evidence of prevalent inefficient mergers justifies a closer scrutiny by the agencies of transactions with potentially anticompetitive effects. After all, merger policy balances the uncertain prospects of over- and under-enforcement—that is, the risk of blocking efficient mergers versus the risk of allowing the consummation of anticompetitive ones. Hence, these commentators assert, if inefficient mergers are prevalent, the risks of over-enforcement diminish and a greater emphasis on preventing anticompetitive mergers is warranted (Reeves and Stucke 2011).

Irrespective of its ultimate antitrust evaluation, therefore, the prevalence of inefficient mergers clearly illustrates the limited capacity of firms to eliminate costly managerial behavior, particularly where the interests of managers and their firms diverge. Indeed, in the case of mergers, at least some of those intra-firm governance mechanisms that seek to address agency problems—like the contractual arrangements that determine managerial compensation in part based on firm size—may both promote inefficient mergers by strictly rational managers and do little to discipline boundedly rational merger activity.

Costly Bounded Rationality and the Limits of the Firm: Resale Price Maintenance. At times, the bounded rationality of managers harms the firm without benefiting managers, suggesting that firms will more likely discipline such deviations from strict rationality. Besides the general limitations of intra-firm mechanisms, however, firms must first identify their managers' costly errors and determine how to remedy them, a task that can be particularly challenging under some circumstances, as exemplified by the case of resale price maintenance (RPM)—a vertical agreement in which manufacturers dictate the minimum price at which their products are resold at retail.

Antitrust commentators have long debated the merits and demerits of this vertical practice based on the assumption of manufacturer rationality. Some point to RPM's potential procompetitive benefits, primarily the stimulation of various costly retail services that enhance consumer demand and total sales of manufacturers' products (Easterbrook 1984; Klein 2009). Others note the anticompetitive potential of the practice, which can facilitate cartels and otherwise soften horizontal competition at manufacture or retail (Comanor 1985; Cooper et al. 2005). On either account, therefore, RPM always benefits its adopters, whether by beneficially raising demand or harmfully increasing market power. Because it can generate pro- and anticompetitive outcomes alike, resale price maintenance is now governed by the rule of reason, under which plaintiffs must show the practice anticompetitive on balance in the specific case (*Leegin* 2007).

Behavioral antitrust offers a novel perspective on RPM. Specifically, both the historical evidence on the practice and the behavioral literature reveal that when resale price maintenance is legal some manufacturers will excessively impose it on their retailers (Tor and Rinner 2011). Manufacturers are prone to error with respect to vertical price restraints due to a number of behavioral phenomena: Judgmental biases—including anchoring on biased information from retailers, the availability and representativeness effects of a few vivid cases and small samples—lead managers to overestimate the expected harms of retailer price-cutting. Loss aversion makes managers averse to the potential harms of price-cutting and fairness concerns can lead them to react negatively to perceived free-riding by discounting retailers on the manufacturers' brand investments. Manufacturers also tend to overvalue the direct elimination of retail price-cutting through RPM and to overestimate its benefits compared to alternative distribution arrangements that address the potential harms of price cutting in more indirect ways. Unlike their perfectly rational, hypothetical counterparts, therefore, real manufacturers sometimes overuse RPM, often at a cost to their own sales and profitability. Excessive use of the practice, moreover, can harm some retailers who are forced to charge higher prices for the manufacturer's products than is optimal for them in their specific market setting.

These potential costs of boundedly rational RPM notwithstanding, further analysis reveals that the practice raises antitrust concerns only those limited circumstances when it harms the competitive process itself rather than being costly to a few specific manufacturers and some of their retailers. Such harm to competition may occur, for example, when firms with substantial market power excessively use RPM or when the

practice is pervasive in a given market, circumstances under which consumers may not have effective substitutes for the price-maintained products. Based on these and similar observations, moreover, behavioral antitrust can offer an appropriately structured rule of reason for RPM, following the recent approach taken by the United States Supreme Court (*Leegin* 2007).

Importantly, the behavioral analysis of resale price maintenance also illustrates how firms can be slow to discipline some behavioral phenomena. The historical data shows that when the practice is legal certain manufacturers employ it for significant periods of time, even when it is not beneficial to them. The slow learning of some firms to avoid resale price maintenance is understandable, however, once the relevant behavioral processes are taken into account. On the part of firms, at least some of the forces that make RPM excessively attractive—such as the desire to control and limit business risks—can be pervasive features of managerial behavior more generally (Kahneman and Lovallo 1993; March and Shapira 1987; Shapira 1995). Furthermore, when a business practice is unprofitable, managers may learn of it over time and avoid it. However, firms find it particularly difficult to learn the precise consequences of RPM. Manufacturers expect resale price maintenance to be costly in the short run, because the practice tends to increases retail prices and therefore reduce consumer demand. Yet the purported long-term benefits of RPM are hard to ascertain because of the myriad factors that over time impact consumer demand for a given product and the competitive conditions in the market. Moreover, the imposition of vertical price restraints itself impedes firms' ability to learn when RPM is beneficial or costly for them. This practice, by definition, eliminates retail price variations for the manufacturer's products and, with them, the valuable information they could have provided regarding the response of different markets to different price points (Tor and Rinner 2011).

6. Conclusion

The behavioral antitrust enterprise is still nascent. Despite the recent flood of scholarship seeking to apply behavioral findings to antitrust issues, many important questions have yet to be examined at any depth. And while the interest of scholars in this new approach promises to yield further insights, the challenges of effectively and convincingly applying to antitrust those behavioral findings that primarily concern the non-market behavior of individual decision makers are significant. Partly for this reason, commentators recently have called for additional empirical evidence to shed light on behavioral antitrust questions (Bennett et al. 2010; Ginsburg and Moore 2010; Reeves and Stucke 2010). Indeed, some analysts have repeated the call for empirical evidence on numerous occasions without considering fully what new evidence is needed and under what conditions might this evidence help resolve the challenges facing behavioral antitrust (Reeves 2010; Stucke 2009, 2011, 2013).

For example, the suggestion that the antitrust agencies conduct additional retrospective studies of mergers in different industries—whether of mergers that were not

challenged or those that were challenged unsuccessfully—would surely be beneficial (Stucke 2009, 2011; Reeves and Stucke 2011). After all, any additional evidence regarding the real outcomes of these mergers would be informative for antitrust policy. Notwithstanding their general value for antitrust enforcement, however, this and similar types of empirical evidence will do little to clarify when and how specific behavioral phenomena shape the competitive conduct of firms in markets. Even a finding that some horizontal mergers that ex-ante raised significant competitive concerns but ultimately went forward without enforcement action led to substantial increases in market power but no appreciable efficiencies would not contribute much to the behavioral antitrust debate. Such a finding might show the agencies too permissive or maybe properly cautious—once the costs of erroneously excessive enforcement are taken into account—but would not prove whether this outcome reflects rational calculation (the merged firm is now better off), managerial overconfidence (efficiencies were not realized), or simply the resolution of business uncertainty that occasionally selects for less-likely outcomes.

This is not to say that amassing further empirical evidence would not advance antitrust law and policy, only that such findings will rarely clarify the extent to which behavioral phenomena manifest in antitrust markets and the precise form they take in these settings, if any. An exception to the limited behavioral utility of such findings might be where robust empirical patterns contradict standard accounts and better conform to behavioral ones. Yet even in these uncommon cases the behavioral lesson may still be ambiguous, given the uncertainty of markets on the one hand and the lack of direct evidence linking specific managerial-level phenomena with the competitive conduct and outcomes of firms on the other.

Therefore, to advance behavioral antitrust beyond a reasoned and careful theoretical application of more general findings from the lab and the field, scholars need something more than empirical antitrust evidence writ large. Experimental studies of antitrust offer one valuable and developing category of research that may yield such benefits (Engel [2005, 2007, 2009, 2010]; Engel and Zhurakhovska 2011; Hinloopen and Normann 2009). In particular, controlled experiments that test for the manifestation of more broadly known behavioral phenomena or at least are informed by these findings—such as the approach promoted recently by advocates of "behavioral industrial organization"—can offer more direct evidence that links behavioral patterns to the conduct of and outcomes for firms in markets (Van Damme, Larouche, and Muller 2009). The development of empirical studies and theoretical models that link specific managerial characteristics with firm-level outcomes—following the success of similar approaches in behavioral finance—might offer another potentially beneficial venue for future, behaviorally-informed research in antitrust (Malmendier and Tate 2005; Niu 2010; Puetz and Ruenzi 2011)

Overall, different types of empirical—observational and experimental—evidence offer different benefits and limits from the perspective of behavioral antitrust. None of these various sources of evidence is likely to suffice on its own, but together they could dramatically enhance our understanding of market behavior and its competitive

consequences. Even in the best of future cases, however, dramatic developments using new approaches will likely take many years to generate a sizable body of evidence. In the interim, and probably thereafter as well, antitrust analysis will benefit greatly from a better understanding of the nature of the empirical behavioral findings that underlie behavioral antitrust.

Most importantly, this evidence concerns specific behavioral regularities (and thus also irregularities) rather than broad certainties in the mold of the universal, hypothetical model of antitrust rationality. Human behavior is highly variable and context dependent (Mitchell 2003; Rachlinski 2000; Tor 2008), so we cannot expect antitrust actors all to behave in the same fashion all the time. The institutions of antitrust—most notably the markets and firms discussed here—can make the behavior of antitrust actors more universal and predictable (Engel 2005). Yet not only are they incapable of altogether eliminating the variability and heterogeneity of individual behavior but markets and firms also introduce some additional behavioral complexities, as this chapter made clear.

For this reason, one immediate implication of behavioral antitrust is that the law must account for both behavioral regularities and behavioral irregularities. When fashioning antitrust doctrines and enforcement policies, courts and agencies will do well to factor in the likelihood of systematic deviations from assumptions of rationality on the part of consumers and firms overall. At the same time, however, one should not mistakenly assume that these population-level tendencies apply to all market participants, all the time. Hence, those evidentiary and procedural rules, as well the decisions of courts and agencies in specific antitrust cases, should leave appropriate room for evidence of the potentially irregular conduct of specific market participants and its competitive effects.

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