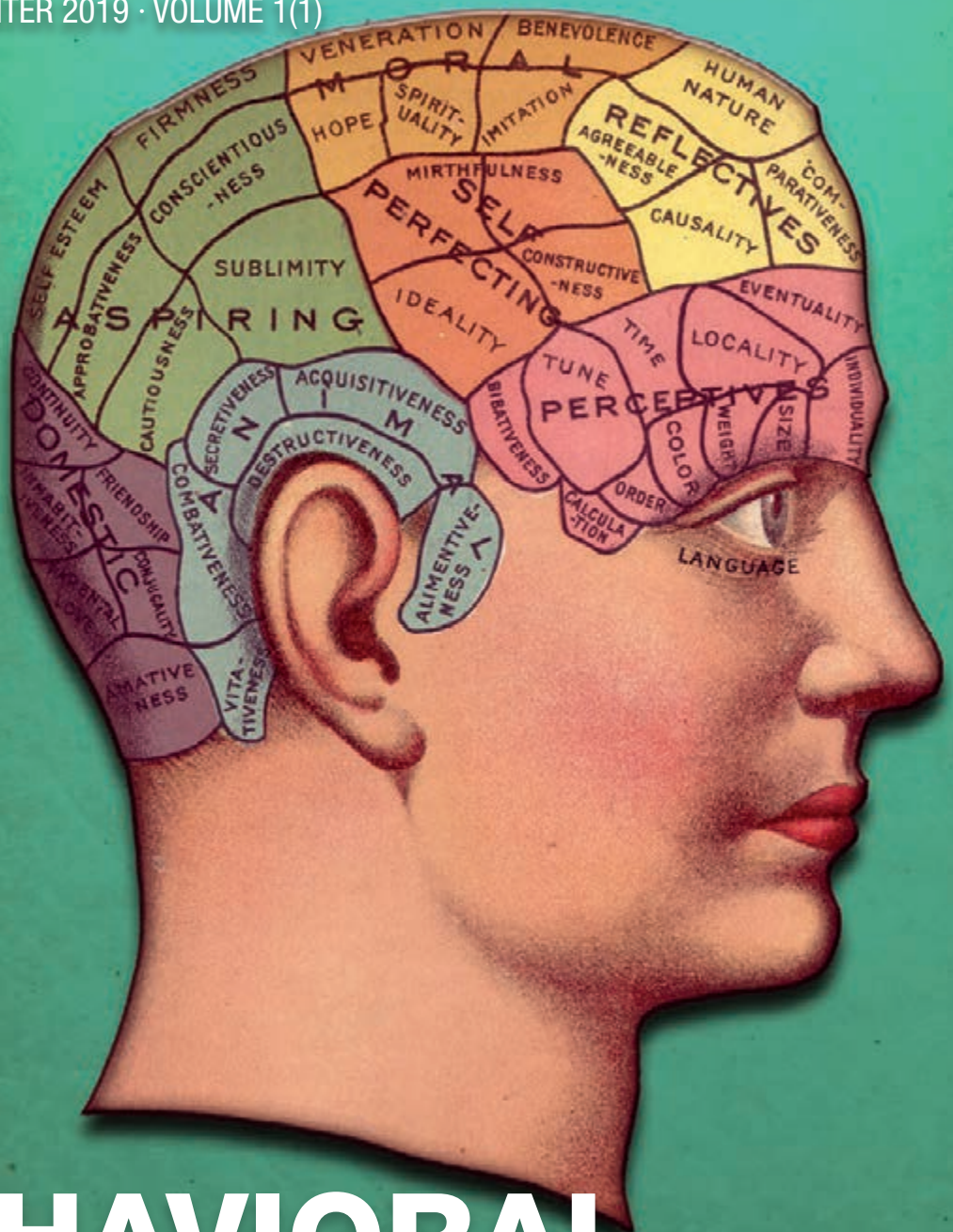
Antitrust Chronicle

JANUARY · WINTER 2019 · VOLUME 1(1)



BEHAVIORAL ANTITRUST

CPI COMPETITION POLICY INTERNATIONAL

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LETTER FROM THE EDITOR

Dear Readers,

We are pleased to kick off 2019 with an edition of the CPI Antitrust Chronicle devoted to the latest developments in Behavioral Antitrust. Behavioral economics is generally defined as "a method of economic analysis that applies psychological insights into human behavior to explain economic decision-making."

Economic analysis has long held an important role in the world of antitrust. Today's antitrust analyses are largely grounded in neoclassical economics theory: consumers and firms are rational, profit maximizing entities. But where does behavioral economics fit in? Should behavioral economics play a role in antitrust law and analysis? And if so, to what degree?

This is a hotly debated topic within international antitrust. Some authors argue that "behavioral economics is now mainstream" while others argue that its "not ready for the main stage." In addition, this month's Chronicle features articles which give a bird's-eye view of the debate as well as articles that focus on topics such as hindsight bias and herd behavior, among others.

As always, thank you to our great panel of authors.

Sincerely,

CPI Team

SUMMARIES

Should Antitrust Survive Behavioral Economics?

By Avishalom Tor

The accepted economic justification for antitrust law rests on the neoclassical microeconomic model that shows that perfect competition maximizes efficiency and welfare. This model assumes that consumer demand reveals rational consumer beliefs and preferences. Yet an otherwise competitive market that caters to "erroneous" demand based on consumers' mistaken beliefs or constructed, *ad-hoc* preferences, such as those revealed by behavioral research, will fail to maximize efficiency and welfare. After clarifying the challenges posed by the behavioral evidence, this article outlines two responses that show why antitrust law remains indispensable even in the face of consumers' bounded rationality.

The EU *Google* Decisions: Extreme Enforcement or the Tip of The Behavioral Iceberg?

By Amelia Fletcher

The recent EU *Google* decisions may represent a high-water mark for the use of behavioral economics in EU antitrust to date, but what do they imply for competition policy in the future? Do such cases represent the outer extremes of how far behavioral thinking can and should be taken? Or do they represent baby steps towards the more comprehensive incorporation of behavioral economics into competition policy thinking? This article highlights the widespread influence of behavioral economics across other areas of policy and discusses a number of directions in which competition policy could potentially be transformed. Noting the existence of an extensive literature in behavioral antitrust, it focuses on a number of aspects which have been given less attention to date.

Facts Over Theory: The Contribution of Behavioral Economics to Competition Law

By Andreas Heinemann

Traditionally, economic analysis is based on the *homo economicus*-hypothesis: Perfectly rational, strong-minded and self-interested persons and entities maximize their own utility or profit. By contrast, behavioral economics takes into account biases, inconsistent preferences, and altruism thus giving a more realistic view of decision-making. Competition law has always had an inclination to real behavior: If customers do not consider a certain product as a possible substitute, this product does not exert competitive pressure regardless of whether a rational buyer should view it as interchangeable. It is time to give the realistic approach a more general relevance in competition law.

Behavioral Firms: Does Antitrust Economics Need a Theoretical Update?

By Elizabeth M. Bailey

Modern day antitrust analyses are grounded in traditional neoclassical economics theory, assuming consumers and firms are rational, profit maximizing entities. While allowances are made for consumers to depart from neoclassical theory in consumer protection, the enforcement of antitrust policies continues to assume firms as rational, profit-maximizing entities. However, empirical literature in finance and economics has provided a growing collection of real world examples of the ways in which firms depart from profit maximization. As a result, it makes sense to fill the gap in our knowledge: How well do the market outcomes from behavioral firms approximate the market outcomes predicted by neoclassical economic models -- is antitrust policy, relying on the traditional neoclassical framework, getting it right enough of the time?

SUMMARIES

Behavioral Economics and Antitrust Law: Hindsight Bias

By Christopher Leslie

Antitrust law often requires judges to place themselves in the position of one of the litigating parties at an earlier time and to make predictions, as of that point in time, about future outcomes. This invites hindsight bias. For example, in attempted monopolization cases, judges often assert that if the defendant did not actually succeed in monopolizing the market, then there was never any likelihood that it ever could have succeeded. This essay explains how hindsight bias has improperly affected antitrust decisions across three areas of antitrust law: attempted monopolization, predatory pricing, and price-fixing conspiracies. This essay explains how hindsight bias effectively amends substantive antitrust doctrine and how courts can reduce the risk of hindsight bias in antitrust litigation.

Behavioral Economics: Antitrust Implications

By Stephen Martin

U.S. Supreme Court decisions dictate that evidence in antitrust cases should be interpreted in accordance with the realities of competition in the marketplace, but seem to interpret such evidence as if the characteristics of most markets were close to the assumptions of the economic model of perfect competition. This is inconsistent with the role of the model of perfect competition in economic theory and with economists' understanding of the behavior of economic agents.

A Look at Behavioral Antitrust from 2018

By Max Huffman

Behavioral antitrust has proved to have staying power, with continued attention as an area of scholarly inquiry now two decades after the foundational work in behavioral law and economics was published. This short article revisits the origin and meaning of behavioral antitrust and highlights a few areas of its application. The article shows that nothing has been written that directly challenges the applications. It does address critiques of behavioral antitrust, which are several, and in some cases strong, and shows how they do not engage the proponents of behavioral antitrust directly. Instead, while proponents identify areas of application, detractors rue the lack of a general theory. The paper concludes that the progress of antitrust law and economics accommodates new information whether from behavioral economics or any other source, and as that information becomes sufficiently well understood it may lead to an adjustment of standards.

March to The Middle? Herd Behavior, Video Economics, and Social Media

By Adam Candeub

The internet and social media have become our public square. If market dominance or unfair commercial practices allow dominant online platforms to diminish discourse, antitrust law and the FTC or FCC might respond. Developed to understand television markets, video economics, if applied to internet-viewing, suggest that the dominant social media platforms will produce an online experience that caters to median tastes. Behavioral economics, in particular research on herd behavior, bandwagon, and group polarization effects, suggest that individuals may tend naturally towards median views. Economic and behavioral effects could feed upon each other to exclude online minority viewpoints, leading not to a race to the bottom but a march to the middle.

WHAT'S NEXT?

For February 2019, we will feature Chronicles focused on issues related to (1) **Private Enforcement**; and (2) **Data Protection**.

ANNOUNCEMENTS

CPI wants to hear from our subscribers. In 2019, we will be reaching out to members of our community for your feedback and ideas. Let us know what you want (or don't want) to see, at: antitrustchronicle@competitionpolicyinternational.com.

CPI ANTITRUST CHRONICLES MARCH 2019

For March 2019, we will feature Chronicles focused on issues related to (1) **LeadershIP EU**; and our annual (2) **China Edition**.

Contributions to the Antitrust Chronicle are about 2,500 – 4,000 words long. They should be lightly cited and not be written as long law-review articles with many in-depth footnotes. As with all CPI publications, articles for the CPI Antitrust Chronicle should be written clearly and with the reader always in mind.

Interested authors should send their contributions to Sam Sadden (ssadden@competitionpolicyinternational.com) with the subject line "Antitrust Chronicle," a short bio and picture(s) of the author(s).

The CPI Editorial Team will evaluate all submissions and will publish the best papers. Authors can submit papers on any topic related to competition and regulation, however, priority will be given to articles addressing the abovementioned topics. Co-authors are always welcome.

SHOULD ANTITRUST SURVIVE BEHAVIORAL ECONOMICS?

BY AVISHALOM TOR[1]

1 Professor of Law and Director, Research Program on Law and Market Behavior, Notre Dame Law School. Global Professor of Law, University of Haifa Faculty of Law. The ideas outlined in this article are based on Avishalom Tor, *The Uneasy Behavioral Economic Case for Antitrust* (working paper, April 2016) and Avishalom Tor, *Justifying Competition Law in the Face of Consumers' Bounded Rationality*, in New Developments in Competition Law and Economics (Klaus Mathis & Avishalom Tor eds., *forthcoming* 2018). John Ceccio provided helpful research assistance.

I. INTRODUCTION

The accepted economic foundation of antitrust law is straightforward: The neoclassical market model shows that perfect competition among firms maximizes productive and allocative efficiencies and social welfare. This model rests on several assumptions, including — as in neoclassical economics more generally — the notion that consumers are rational actors whose decisions always maximize their utility. To maximize the benefit from their consumption decisions, consumers choose the best mix of products they can obtain, at the best price available. The difference between the market price consumers pay and their valuation of the goods or services, i.e. the "consumer surplus," is a measure of consumers' welfare — the greater this surplus, the better off consumers are.

The virtues of competition within the neoclassical framework are many. Competitive equilibrium generates both productive and allocative efficiency, which maximize both consumer and total welfare. This attractive, welfare-maximizing property of the competitive equilibrium serves as the key economic justification for antitrust law. Like any regulatory regime that requires significant resources and imposes substantial social costs, antitrust law is economically justified only insofar as its benefits clearly exceed its costs.

Nonetheless, a substantial body of empirical evidence shows that real consumers often fail to comport with the assumption of rationality that underlies the welfare benefits generated from the interaction between rational consumers and producers in competitive equilibrium. Specifically, these findings show that, in some cases, consumers hold biased beliefs about the value of products and services and, consequently, demand too much or too little of them. Further analysis shows that in the face of such distorted demand competition cannot maximize efficiency. In fact, under some circumstances, competition among sophisticated producers over the custom of boundedly rational consumers can even diminish efficiency. Beyond the problem of distorted demand, behavioral research also documents numerous instances in which consumers' product choices are constructed or shaped *ad-hoc*, at the time of decision, in clear contrast to the assumption that consumers hold stable, preexisting and orderly preferences. As a result, neither the demand generated by consumers whose preferences are malleable nor the resulting consumer surplus offer a meaningful measure of consumer welfare. Competition over such consumers, moreover, is typically unlikely to improve matters much and can even make consumers worse off.

But if competition over boundedly rational consumers fails to maximize efficiency or advance consumer welfare what remains of the economic justification for antitrust's mission of protecting competition?

II. A SMALLER PROBLEM: COMPETITION OVER BIASED CONSUMERS

An extensive body of empirical behavioral evidence shows that individuals are boundedly rational actors. Unlike the hypothetical rational actor that inhabits standard microeconomic models, the behavior of boundedly rational actors is shaped by their limited cognitive resources, motivation, and emotion. At times, they engage in formal, effortful, and time-consuming judgment and decision making, but more commonly, they use mental and emotional shortcuts — known as "heuristics" — to make judgments and rely on situational cues to guide their choices. These judgment and choice processes are adaptive, necessary, and usually beneficial. At times, however, they lead decision makers to systematically and predictably deviate from the normative standards of rationality.[2]

Beyond documenting manifestations of individuals' general deviations from strict rationality, researchers also study psychological processes that are specific to consumers. For example, some studies examine biases in consumers' inferences about products and their attributes, while others research the specific ways in which sellers and marketers impact consumer judgment and choice through branding, advertising, or sales promotions. Unsurprisingly, these and other related studies reveal that consumers' judgment and decision processes at times systematically deviate from the theoretical economic model of perfect rationality in ways that matter for the interaction between consumers and producers in the market.

Boundedly rational consumers exhibit systematic errors when judging products or services, sometimes misjudging product quality or absolute or relative prices, or even making erroneous predictions of their own future consumption needs. When such mistakes of judgment occur, demand is inevitably distorted. Consumers demand either smaller or greater quantities of some products than they would have absent their errors. Moreover, consumers' biased demand for one product distorts their demand for other products and services. For instance, consumers who erroneously overestimate the quality of one product and consequently demand too much of it will also demand too much of the product's complements and too little of its substitutes. More generally, since consumers' budgets are limited, distorted demand for one product indirectly decreases or increases the resources available for other products. The demand inefficiencies caused by consumer bias also lead producers to

2 See, e.g. Christine Jolls, Cass Sunstein & Richard Thaler, *A Behavioral Approach to Law and Economics*, 50 Stan. L. Rev. 1471, 1536-37 (1998); Avishalom Tor, *The Methodology of The Behavioral Analysis of Law*, 4 Haifa Law Review 237 (2008); Avishalom Tor, *Understanding Behavioral Antitrust*. 92 Tex. L. Rev. 573 (2014).

misallocate their productive resources. Mirroring the effects of consumers' systematic errors in judgement, sellers looking to meet distorted demand will supply consumers with too much or too little of the relevant product, leading to a further misallocation of productive resources.

Moreover, profit-maximizing producers design their products and services to take maximum advantage of extant consumer bias and even exacerbate it when possible and profitable. Indeed, more recently the empirical behavioral evidence has also caught the attention of industrial organization economists, who have begun examining how sophisticated sellers may exploit and even facilitate consumers' deviations from rationality to maximize their own profits, as well as the effects of competition among such sellers. The analyses of these "behavioral industrial organization" scholars show that the efficiency benefits of competition may be less pronounced than traditional models suggest and that increased competition can even harm efficiency under some circumstances.

The ultimate effects of the deviations of real consumer behavior from the standard rationality-based model depend, of course, on the nature of competition in the market. After all, the benefits gained from exploiting consumer bias in the absence of competition may be dissipated in the presence of competition from other sophisticated sellers who are similarly attempting to exploit consumers. However, the overall picture that emerges from the literature in this area is that distorted demand typically generates inefficiencies even in an otherwise perfectly competitive market. Competition often drives product prices down as usual, but the excessive demand generated by consumer bias means that both price and quantity are higher than in a competitive market with unbiased consumers. Perhaps more strikingly, some behavioral industrial organizational models show that increased competition in a market with distorted demand can sometimes reduce efficiency compared to a monopolized market.

III. THE BIGGER PROBLEM: MALLEABLE PREFERENCES AND CONSUMER WELFARE

Consumers' biased beliefs raise significant questions about the extent of competition's efficiency benefits. Yet, the empirical evidence regarding the nature of consumer preferences reveals an even thornier problem for antitrust law's economic justification. This evidence shows that not only does consumer *choice* deviate from assumptions of rationality in predictable ways — much as in the case of consumer *beliefs* — but it is also subject to context-specific influences and may be constructed *ad-hoc*, in the process of choosing among products or services. The extensive findings in this area have led two prominent behavioral scholars to argue that "[t]he variability in the ways we construct and reconstruct our preferences yields preferences that are labile, inconsistent, subject to factors we are unaware of, and not always in our own best interests. Indeed, so pervasive is this lability that the very notion of a 'true' preference must, in many situations, be rejected."[3]

The behavioral literature reveals numerous ways in which actual consumer behavior violates the assumptions of the neoclassical economic model on which antitrust relies. One typical and illustrative set of findings in this area that is particularly relevant for consumer behavior concerns the basic assumption of procedure invariance. Consumers' preferences over different product options — whether vacations, cars, or mortgages — must be independent of the specific procedure used to elicit these preferences. Yet studies offer much evidence of preference reversals in which, under predictable circumstances, different but analytically comparable procedures elicit different choices. These differences are found in comparisons of consumers' willingness to pay for different options to their choices among those same options, consumers' choice of a preferred option from a given set to their rejection of all the less attractive options from the same set, consumers' rating of options presented separately to their choice from among the same options when presented jointly, and more.

For instance, Shafir showed that the positive features of options are weighed more heavily in tasks requiring choice of the superior option, while negative features receive greater weight in tasks that call for rejection of inferior options. Participants in one between-subjects question were asked to imagine they were planning a vacation over spring break and have two reasonably priced options for which the travel brochure gives a limited amount of information. The available information showed one vacation spot was of average quality on the five relevant dimensions of weather, beaches, hotel, water, and nightlife while the other was very good on some dimensions and bad on other dimensions. One version of the problem asked participants which spot they preferred, while the other stated that they currently had two reservations and asked which reservation they wanted to cancel. While two-thirds of the participants in the choice condition preferred the extreme option, almost half of those in the cancellation condition chose to cancel that same option.[4]

Other studies show how apparently different preferences can be manifested in common consumer tasks that require something akin to choosing versus rejecting. Park and colleagues, for example, studied consumer preferences over products by comparing customized offerings in familiar product categories (e.g. computers, cars, treadmills) in which product options are added to a basic product to other customized offerings in which product options are subtracted from a "loaded" model. As predicted, the researchers found that participants facing a subtraction frame

3 Sarah Lichtenstein & Paul Slovic, THE CONSTRUCTION OF PREFERENCE, (2006).

4 Eldar Shafir, *Choosing Versus Rejecting: Why Some Options Are Both Better and Worse Than Others*, 21 Memory & Cognitions 546 (1993).

selected more product options and at a higher overall price than did their counterparts facing an addition frame.[5] In the same vein, striking results were obtained by researchers in two field experiments using a German car manufacturer's online configuration tool. In both field studies, real car purchasers again ended up purchasing more options in the subtractive frame than in the additive frame, with the price paid averaging over 10 percent more of the total cost of the cars.[6]

These and many similar examples of systematic violations of rational choice axioms also show how researchers and market participants alike can influence consumers' choices. This is particularly troublesome for antitrust, since insofar as consumer demand in the market reflects malleable, *ad-hoc* preferences that may not maximize individuals' utility, the notion of consumer surplus and welfare — that most basic economic compass of antitrust — risks losing its meaning altogether. Indeed, the fundamental nature of this challenge has led even those few scholars who recognized its existence to do little beyond that recognition. Thus, recent behavioral industrial organization models that examine the market effects of non-standard consumer preferences still take these preferences as given. They study the supposed welfare effects of competition over consumers with such preferences, while ignoring the question of whether consumer surplus remains a meaningful measure in their presence. Another case in point is the passing argument of some well-known antitrust economists that "irrational decision making by consumers destroys the analytic basis of welfare economics" and should therefore be ignored.[7]

In contrast, the following sections outline a number of ways in which the undeniable empirical evidence of systematic consumer bias and malleable consumer choice may be accounted for while largely retaining the familiar economic justification for antitrust law.

IV. THE UNEASY BEHAVIORAL ECONOMIC CASE FOR ANTITRUST

Consumer bias and the malleability of consumer choice challenge the efficiency and welfare foundations of antitrust law and economics. Somewhat ironically, the same bounded rationality of real consumers that antitrust commentators often draw on to justify more assertive enforcement in fact may undermine the foundational economic justification for protecting and promoting competition. Yet, further analysis suggests two main lines of response to this challenge: First, a careful assessment of the empirical behavioral evidence reveals that although competition typically cannot maximize efficiency or welfare, it still has the general tendency of advancing these critical social goals. Second, a competition-favoring approach remains a more attractive policy baseline than its realistic alternatives despite competition's substantial shortcomings in the presence of boundedly rational consumers. The following sections sketch the basic contours of these two responses, which I develop more fully elsewhere.[8]

A. A First Line of Defense — Competition Still Performs (Sort of)

Where biased consumer beliefs are concerned, those behavioral industrial organization models showing how substantial inefficiencies can remain in a variety of competitive settings also indicate that some market settings reasonably approximate the predictions of traditional rationality-based models even in the presence of real, boundedly rational consumers. For instance, consumers are likely to develop more accurate assessments of the quality of products and services they use frequently, particularly when good information and clear feedback are available. In addition, at least in some markets, sellers or information intermediaries can benefit from advising consumers. Such efforts will not always be effective or truly informative, even when they do take place, but their presence still tends to reduce consumer bias.

In some specific models, moreover, competitive markets with boundedly rational consumers that are not maximally efficient even outperform comparable markets populated with rational consumers. These results obtain, for example, when the nature of the product or the market are such that sellers facing perfectly rational consumers lack the incentive to offer certain superior products that they are incentivized to provide in the presence of boundedly rational consumers.

5 Park, C. Whan, Sung Youl Jun & Deborah J. MacInnis, *Choosing What I Want Versus Rejecting What I Do Not Want: An Application of Decision Framing to Product Option Choice Decisions,* 37 Journal of Marketing Research 187 (2000).

6 Andreas Herrmann, Christian Hildebrand, David E. Sprott, & Eric R. Spangenberg, *Option Framing and Product Feature Recommendations: Product Configuration and Choice*, 30 Psychology & Marketing 1053 (2013).

7 Gregory J. Werden, Luke M. Froeb & Mikhael Shor, *Behavioral Antitrust and Merger Control*, 167 J. Institutional & Theoretical Econ 126 (2011).

8 Avishalom Tor, *The Uneasy Behavioral Economic Case for Antitrust* (working paper, April 2016).

Notably, some factors that help consumers avoid systematic errors of judgment, including substantial experience in an environment that offers relatively clear and immediate feedback, may also attenuate our concerns regarding the malleability of preferences. Indeed, the empirical behavioral evidence clearly indicates that a substantial fraction of preferences is already there prior to the time when consumers demand specific products or services in the market, despite the extensive evidence for ad-hoc preference construction.

Furthermore, the evidence of lability concerns "final preferences" over specific products, services, or other immediate objects of choice — the same preferences aggregated by the consumer demand function in microeconomic models. Yet, observable final preferences are not the only preferences that consumers hold and, likely, are not even the most important category of preferences for the purpose of establishing a meaningful link between consumer choice and consumer welfare. After all, consumers are usually more interested in what a given product offers in terms of the features they care about than in the detailed specifications of these features. In this case, however, so long as the constructed final preferences still satisfy consumers' more abstract requirements, consumer choice is still significantly associated with consumer welfare.

To illustrate, a consumer contemplating the purchase of a digital camera may want a lightweight camera that produces high quality pictures at a low cost, all of which are somewhat abstract attributes and require further specification. Even a clear preference regarding a relatively straightforward attribute, such as the camera's weight, must be further specified, and the consumer is unlikely to hold an extant preference for a specific camera weight over all other possible weights. Consequently, the consumer's weight preference may well depend in part on the particular options she evaluated, the order of their evaluation, and other factors that have been shown to contribute to final preference construction. Yet, what most likely matters for the consumer's welfare is not whether the camera they end up selecting weighs 4.94 oz or 5.14 oz — an outcome that may well depend on various construction processes — but rather whether they subjectively experience that camera's weight as light.

Indeed, the very evidence for preference malleability and construction indicates that consumers do hold certain preferences, albeit sometimes process-oriented or more abstract rather than fully fleshed-out final preferences. Many documented behavioral effects succeed in influencing consumer choice precisely because consumers hold preferences for not choosing extreme options (and therefore tend to prefer intermediate ones), for getting "better" deals (and thus gravitate towards options that seem to offer such deals), and so on.

Finally, the behavioral findings regarding both consumer bias and preference construction reveal a significant degree of heterogeneity in rationality.[9] That is, some consumers exhibit a greater degree of bias while the judgments of others better approximate the normative requirements of strict rationality. In the same vein, not all consumers are equally susceptible to framing, context effects, or any of the other factors that have been shown to contribute to the construction of preferences. Additionally, one finds only limited correlations among consumers' different manifestations of bounded rationality. A consumer who tends to rely on anecdotes when judging product quality, for instance, is not necessarily also among those whose choices are more susceptible to the influence of framing effects. For this reason, any given market is populated by a mix of consumers who deviate to different degrees from perfect rationality. This heterogeneity in rationality, in turn, may limit the problematic consequences of consumers' bounded rationality for efficiency and welfare. In this vein, some behavioral industrial organization models find that the efficiency of market outcomes tends to increase with the proportion of consumers that better resemble the hypothetical rational actor.

Hence, a closer inspection suggests that the challenges posed by consumer bias and the malleability of consumer preferences are substantial, but perhaps not as detrimental as they initially appear. In many market settings, competition is still likely to promote efficiency and consumer welfare even when the full benefits anticipated by the traditional microeconomic model are unattainable.

B. A Second Line of Defense — Competition is Still (Usually) Better than its Alternatives

The conclusion that competitive markets with real, boundedly rational consumers can still achieve some of the benefits expected of competition in rationality-based models is comforting. Yet, from a competition policy perspective, the most important comparison is not between real competitive markets and the traditional microeconomic model, but instead the comparison between more competitive markets with boundedly rational consumers and less competitive markets with the same consumers. Put differently, policymakers do not have the privilege of choosing the consumers that populate real markets. Rather, they must determine whether the protection of competition in markets with boundedly rational consumers tends to advance efficiency and consumer welfare better than its alternatives — that is, better than diminished competition in the form of increased market power or further direct market regulation.

Once the question is posed this way, however, the answer becomes quite clear. Even in behavioral industrial organization models, increased competition often improves market outcomes compared to monopoly or diminished competition conditions. And though in some cases competition generates further inefficiencies, the circumstances that bring about such "harmful competition" are usually limited in scope.

9 Avishalom Tor, *Understanding Behavioral Antitrust*. 92 Tex. L. Rev. 573 (2014).

Moreover, competition may also offer a superior means for advancing consumer welfare in the face of preference malleability. We have seen that consumer choice may be less susceptible to *ad-hoc* construction processes when consumers have more product-specific experience, particularly if good information and clear feedback are available. As with consumer bias, a monopoly producer that can profit from shaping consumer choices will do so. A more competitive market, on the other hand, may generate competing efforts by other producers to offer alternatives and shape consumer choice, thus offering conusmers at least some opportunity to identify those alternatives that better fit their underlying, more abstract but more meaningful preferences.

Where the comparison between competition and regulation is concerened, some models suggest the latter can outperform the former. Nonetheless, this advantage is typically limited to narrow market settings and, more importantly, depends on mostly unrealistic assumptions regarding regulators' knowledge and ability. The limits of regulatory interventions are particularly significant, moreover, with respect to consumer choice. Indeed, interventions that limit sellers' manipulation of consumer choice might be beneficial, but they function best as complements for competition-favoring policies. Regulatory efforts to directly constrain and determine consumer choice, in contrast, are usually unlikely to improve consumer welfare and cannot replace competition as the fundamental policy approach to market behavior across the board.

Frequently, the strategic responses of rational producers to the predictable mistakes of some boundedly rational consumers also render regulatory alternatives to competition inefficient or at least effective only under very specific circumstances. Even when simple models suggest that direct regulation of price or other product characteristics can outperform competition, the reality involved in implementing such regulation is likely to be far more challenging, as the public choice literature describes at length and amply illustrated by the empirical evidence.

The need for caution regarding the likely benefits of regulatory alternatives to competition is further suggested by regulators' own bounded rationality. And while regulators are better positioned than individual consumers to avoid systematic error, they are still at a substantial disadvantage *vis à vis* sophisticated firms that react strategically to their interventions.

Finally, most significant markets in which competition may generate substantial inefficiencies are already subject to extensive regulatory schemes. Industries that revolve around credence goods — such as the services of professionals that most consumers cannot judge on their own, like medical or legal services — are subject to professional regulation. Similarly, the financial and telecommunications industries are subject to regulatory schemes that partly seek to address consumer protection concerns, even if these schemes are not explicitly or directly aimed at responding to the effects of consumers' bounded rationality.

V. CONCLUSION

The economic justification for policy makers' reliance on the costly and cumbersome apparatus of antitrust law and its enforcement is based on the efficiency and welfare maximization properties of competitive markets. These beneficial outcomes of competition rest *inter alia* on the assumption that consumers are rational economic actors, whose judgments of the products available to them in the market are unbiased and who hold extant, complete and orderly preferences regarding these products. Yet, the reality of consumer behavior is dramatically and systematically different from that assumed by the traditional microeconomic market model. This discrepancy between theory and reality raises fundamental questions about the ability of competition and its protection to yield the efficiency and welfare benefits predicted by the standard neoclassical model.

All is not lost, however. The two avenues of response outlined here may help justify the survival of antitrust law despite the challenges posed by consumer bias and the construction of consumer preferences. First, while competition with real, boundedly rational consumers usually cannot maximize efficiency or welfare, it still has the general tendency of advancing these critical goals. Second, a competition-favoring approach remains a more attractive policy baseline than its realistic alternatives of diminished competition due to either increased private market power or enhanced governmental regulation, the substantial shortcomings of competition notwithstanding. Hence, further research and analysis are required to identify the specific market settings in which monopoly or additional regulation may outperform competition, but the present findings can still justify the law's general policy orientation of protecting competition.

Nevertheless, the behavioral challenges for and defense of antitrust do offer a cautionary note for practitioners, policy makers, and scholars in the field. Even if a basic pro-competition stance still makes good (behavioral) economic sense in the face of the interaction between boundedly rational consumers, sophisticated firms, and well-meaning regulators, some humility is in order. Unlike the textbook case for competition as an efficiency and welfare maximizing panacea, real world competition is destined to fall short of these goals in the best of circumstances, regardless of its superiority to any realistic policy alternative.

Finally, besides humility, the limited efficacy of competition with boundedly rational consumers also raises intriguing new questions concerning the proper balancing of competition against other policies, such as sector-specific regulation, intellectual property, and more, which offer fertile grounds for further study.

THE EU *GOOGLE* DECISIONS: EXTREME ENFORCEMENT OR THE TIP OF THE BEHAVIORAL ICEBERG?

BY AMELIA FLETCHER[1]

1 Centre for Competition Policy, University of East Anglia. This article was supported by the Economic and Social Research Council [grant number ES/P008976/1]. Amelia is also a Non-Executive Director on the Boards of the UK Financial Conduct Authority, Competition and Markets Authority, and Payment Systems Regulator, and a decision-maker on enforcement cases at Ofgem. Amelia is grateful for comments from colleagues Sean Ennis, Morten Hviid, and Bruce Lyons. However, all views are her own and do not necessarily reflect the views of anyone or any organization with which she is associated.

I. INTRODUCTION

The recent EU *Google* decisions made waves around the world. In large part, this was because they involved a huge and innovative digital economy platform and were the highest fines yet imposed by the EU. However, the decisions are also notable for their reliance on key insights from behavioral economics.

Behavioral economics may not have been mentioned explicitly in the *Google Shopping* decision, but the Commission's case hangs on the fact that the "more favorable positioning" of results on the Google search page leads to increased traffic and click-throughs. As such, the case effectively relies on a behavioral tendency called saliency bias, whereby individuals typically decide on the basis of what is most obvious or prominent to them.

The EU *Google Android* case is more explicit still. The decision is not yet out, but the press release uses behavioral economics terminology in mentioning *status quo* bias as a key underlying driver of the abuse. This behavioral tendency means that users who find search and browser apps pre-installed on their devices are likely to stick to these apps.

Together, these Google decisions may represent a high-water mark for the use of behavioral economics in EU competition policy to date, but are they so novel? Not necessarily. The 2009 EU *Microsoft Browser* decision was effectively also related to *status quo* bias, even if the term was not used, and the "choice boxscreen" remedy was specifically designed to ensure consumers made an active and unbiased choice, implicitly recognizing the risk of default bias.

The bigger question is what the *Google* decisions imply for competition policy in the future. Are such cases as far as behavioral economics can and should be taken in this arena? Or do these cases represent baby steps towards the more comprehensive incorporation of behavioral economics into competition policy thinking?

In some senses, the use of behavioral economics in these cases is far from extreme. The biases mentioned above – *status quo* bias, default bias, and saliency bias – are among the most well-evidenced and least controversial of all behavioral biases. It would arguably be more extreme to ignore factors that are so obviously relevant to how consumer behavior, and therefore competition, in fact works.

Moreover, behavioral thinking has already had widespread influence in a variety of other areas of policy. In EU consumer law, the recent online ban on opt-out selling of add-on products (otherwise known as the ban on pre-ticked boxes) is specifically designed to address default bias. In developing recent EU law relating to financial services, the Commission has increasingly adopted consumer testing of new regulations, reflecting a recognition that behavioral factors are highly relevant. In the UK, the law has been changed such that firms must now provide workplace pensions on an opt-out, rather than an opt-in, basis. This was based on an understanding of behavioral biases, and in particular the consumer inertia, surrounding pension decisions.

So, does such thinking have a much wider role to play in competition policy too, reflecting the revolutionary effect it is having across both economics and policy more widely? This short article discusses four key questions, relating to ways in which behavioral thinking could potentially transform this area.

- Does effective competition policy require more than standard antitrust?
- Within standard antitrust, will behavioral economics change theories of harm?
- What does behavioral economics imply for empirical analysis in antitrust?
- Do supply-side biases need to be considered too?

Some of the ideas discussed below may be controversial. Others, however, seem almost incontrovertible if competition policy is properly to reflect real world behavior.

II. DOES EFFECTIVE COMPETITION POLICY REQUIRE MORE THAN STANDARD ANTITRUST?

In the UK, the competition policy tools available to the Competition and Markets Authority ("CMA") include market investigations. If the CMA identifies features of a market which have an adverse effect on competition, it can impose proportionate remedies.

A key insight from these investigations, over the years, is that the identified competition problems are often related to problems on the demand-side. These are very different from the sorts of supply-side considerations that are more normally addressed by standard antitrust. However, they can be equally important, if not more, for driving effective competition which delivers for consumers.

What is the thinking behind this? Behavioral economics tells us that consumers may not act like rational automata, choosing an optimal product that perfectly maximizes their utility. Rather, they instead exhibit all sorts of biases and these can in turn have important implications for competition.

- First, biases can weaken competition, in particular by creating or exacerbating search frictions and switching costs. For example, if consumers exhibit *status quo* bias or myopia – both common behavioral tendencies – they are less likely to take the time to seek out better options that may be available in the market. But if this is the case, then firms will in turn have less incentive to improve their offerings, since they will gain fewer customers by doing so, and the process of competition will thus be less vigorous. This insight has led to a greater focus by the UK competition authority and sector regulators on developing interventions which "nudge" consumers to engage with the market, with a view to increasing competition.[2]

- Second, if consumers differ in the extent to which they exhibit such biases, we may observe market segmentation, whereby there is plenty of competition for "active" customers, but far higher prices for "inactive" customers. Overall, profits need not necessarily increase, depending on the extent to which firms compete away, in the "active" segment, the rents they make from the "inactive" segment. Nonetheless, such pricing may be of concern, both because it distorts consumption decisions and due to fairness considerations, the latter of which can also be highly political. In the UK energy market, such concerns recently culminated in the introduction of a safeguard price cap to protect inactive customers. In the meantime, there are continuing attempts to develop more competition-friendly solutions to this particular problem.

- Third, biases may result in competition occurring on "the wrong dimensions." For example, if consumers are more likely to choose products on the basis of what is most salient, then firms will tend to compete harder on more salient dimensions and act more monopolistically on less salient dimensions. As a result, in some markets we may see plenty of competition on upfront price, which is highly salient, but firms offering poor quality or terms and conditions, which are less salient. Consumer law can help here. For example, the law on unfair contract terms can be viewed as a way of helping to ensure that competition works to deliver good consumer outcomes. However, other interventions may also be needed to nudge consumers towards the more holistic appraisal of options and reduce the impact of saliency bias.

- Fourth, given that consumer biases can weaken competition, we may see firms deliberately acting to exacerbate such biases. This could involve obfuscation or by framing information in misleading ways. The strategic use of partitioned pricing and drip pricing are two obvious examples. It could also involve using contractual means, such as automatic renewal terms in contracts, which are designed to discourage engagement with the market. Again, consumer law can play a role in enhancing competition by limiting such misleading sales behavior, but there may be a role for more competition-focused interventions.

Indeed, in all of the above, while consumer law can clearly play a positive role, it is important to recognize that consumer law is essentially motivated by a focus on consumer protection, not competition concerns. As such, it may not always be ideally designed for the latter objective.

If competition authorities are to address this important aspect of competition policy effectively, therefore, they may require competition-focused rule-making tools – like UK market investigations – which go beyond the standard antitrust provisions. This set of concerns may also provide a rationale for combining competition and consumer enforcement powers within one authority, which is then able to address concerns from both perspectives at once.

2 For a detailed description and evaluation of the "demand-side remedies" described in this and the following bullets, see Amelia Fletcher (2016), "The Role of Demand-Side Remedies in Driving Effective Competition: A Review for Which?," available at https://www.staticwhich.co.uk/documents/pdf/the-role-of-demand-side-remedies-in-driving-effective-competition-456067.pdf.

III. WITHIN STANDARD ANTITRUST, WILL BEHAVIORAL ECONOMICS CHANGE THEORIES OF HARM?

Behavioral economics can also enhance our understanding of how firms' actions can have anti-competitive effects. This may involve entirely new theories of harm, but it may also involve tweaks to more standard theories of harm. There is an extensive existing literature on "behavioral antitrust" which highlights a number of such potential implications.[3] Rather than simply summarize those ideas, this article focuses on a few more novel, and potentially more controversial, aspects which have been given less attention to date.

A. Abuse of Dominance

First, as is shown by the *Microsoft Browser* and *Google Android* cases, the impact of tying and bundling can potentially have a more serious anti-competitive effects if one allows for default or *status quo* bias. If consumers can be tied into a particular related service initially, this can create long-term market power, even if they are free to switch thereafter. This is a well-recognized point.

Perhaps less obvious is that, in the digital arena, this effect may potentially be amplified by the fact that services are ostensibly free, albeit effectively paid for with consumer data. Another behavioral bias may be relevant here. If services are apparently free, then consumers may be disinclined to focus on the less salient price they are paying in terms of their data. Moreover, even if they did, consumers find it very hard to value this data, and their revealed preferences may be very different from their stated preferences. Such factors may make consumers even less likely to move away from the default or *status quo* choice, thus exacerbating the risk of anti-competitive tying and bundling in this digital environment.

Second, as discussed above, the *Google Shopping* case essentially relies on saliency bias, such that consumers tend to make choices on the basis of what is most prominent to them, rather than assessing information more holistically. While that case involves a platform giving undue prominence to its own vertically integrated offering, and thereby leveraging its market position from one activity to another, the strong impact that rankings can have on sales by platform users could potentially have wider anti-competitive effects.

Suppose, for example, that a platform provides seller rankings to consumers which appear to reflect their interests but in fact depend on the level of commission paid to the platform by the sellers. This means that competition ends up occurring on the basis of which sellers can pay the most to the platform for the ranking, rather than which sellers actually offer consumers the best product offering. Such behavior is therefore potentially misleading for consumers, which could breach consumer law. However, it is also arguably exploitative of the platform's "competitive bottleneck" position in reaching those consumers. This is especially likely to be true where consumers are "single-homing" in that they do not search around across platforms, perhaps due to *status quo* bias. If the platform also gives better rankings to sellers which are willing to list exclusively on that platform, this could potentially also be exclusionary.

Moreover, requiring the platform to provide information to consumers on how the ranking is in fact derived is likely to be of little use in correcting this situation, given that real consumers, who exhibit bounded rationality, are unlikely to know how to adjust their choices on the basis of this information. Given this market context, then, might such ranking rules constitute an abuse of dominance?

Third, another area which has raised renewed interest in recent years has been personalized pricing. Where price discrimination was based on consumers' willingness to pay, authorities typically took a fairly sanguine view. However, it is not obvious that this *laissez faire* approach is still justified when price discrimination reflects consumer biases.[4] Again, this has been identified as a particular issue in a digital environment. In this context there are also concerns that such price discrimination will be much easier for an incumbent which has masses of data about consumer behavior, and much harder for an entrant without access to such data. As such, in a digital environment, personalized price discrimination could potentially be exclusionary, as well as exploitative.

Fourth, the impact of consumer myopia on firms' incentives to protect and exploit their own proprietary aftermarkets are fairly well understood. The less weight that consumers give to future prices, the more they will tend to opt for low upfront prices, even if these are to be followed by "rip-off" aftermarket prices. As such, a greater integration of behavioral economics within antitrust could thus lead to a renewed interest in aftermarket cases.

3 See, for example, Matthew Bennett, Amelia Fletcher, Liz Hurley & David Ruck, "What Does Behavioral Economics Mean for Competition Policy?," Competition Policy International, Spring 2010, 120-32, https://www.competitionpolicyinternational.com/what-does-behavioral-economics-mean-for-competition-policy/; Maurice E. Stucke, "Behavioral Antitrust and Monopolization," Journal of Competition Law & Economics, Volume 8, Issue 3, 1 September 2012, Pages 545–574, https://doi.org/10.1093/joclec/nhs018; Avishalom Tor, "Understanding Behavioral Antitrust," 92 Tex. L. Rev. 573 (2013-2014). https://scholarship.law.nd.edu/law_faculty_scholarship/296.

4 Such naïveté-based discrimination is discussed in Paul Heidhues & Botond Kőszegi, "Naïveté-Based Discrimination," The Quarterly Journal of Economics, Volume 132, Issue 2, 1 May 2017, Pages 1019–1054, https://doi.org/10.1093/qje/qjw042.

Perhaps less well recognized is that similar "consumer tie-in" effects can result from other behavioral biases too. For example, saliency bias can lead consumers to focus on prominent upfront prices and ignore the less prominent after-market prices. If firms are able to reduce the prominence of the latter through deliberate "shrouding," could this be seen as an abuse of dominance?

Likewise, as discussed above, *status quo* bias can mean that, once a firm has won a consumer in one period, it is more likely to keep that consumer in later periods. Firms may be able to exploit this position by charging these inactive customers a higher price than they offer to active customers. They may also be able to exacerbate the effect of the *status quo* bias by making it harder for consumers to search or switch away, perhaps playing on behavioral factors such as forgetfulness (which may limit a consumer's ability to cancel the contract during a defined termination window) or dislike of conflict (which may limit a consumer's willingness to switch if it requires calling up the original supplier).

As such, just as is the case for aftermarkets, firms can potentially behave in an exploitative and exclusionary manner in respect of their inactive customers. Should this ever be considered an abuse of dominance?

B. Anti-competitive Agreements

Consumer behavioral biases may also have implications for anti-competitive agreements.

In terms of horizontal agreements, it is increasingly well understood that the presence of behavioral biases may potentially alter the likelihood of standard price or market-sharing collusion. For example, Bos et al. (2011) show that if consumers exhibit strong inertia, then price collusion is easier to achieve.[5]

Less attention has been given to the idea that, in the presence of demand-side behavioral biases, firms may be able to engage in an alternative form of collusion: collusion to dampen competition. For example, it may be in the joint interest of two rival firms to agree to set their price structures very differently, or make their pricing highly complex, in order to limit comparability between them. By dis-incentivizing consumer search, this can dampen competition and enhance firm profitability.[6] Likewise, firms may agree to make quality far more salient to consumers than price. With saliency bias, this will tend to lead to competition occurring on quality rather than price, which in turn may again be rather weaker, and thus generate higher profits.

In terms of vertical agreements, much of the behavioral antitrust literature to date has focused on how behavioral biases may provide additional support for efficiency rationales frequently given for vertical agreements.[7] However, there are potential negative implications of behavioral biases for vertical agreements too, which have so far been less well developed.

As an example, there has been much discussion of the role of retail MFNs in changing platforms' incentives when setting their commission rates. There has been less focus on their potential impact on consumer behavior. If retail MFNs are accompanied by credible "best price" claims, then consumers who are anyway disinclined to search across different platforms may be even more inclined to stick to a single platform. This is important because any increase in "single homing" on the consumer side of the market will in turn tend to increase the market power of the platform in relation to the seller side of the market, by making the platform more of a competitive bottleneck to consumers. As such, retail MFNs can potentially increase platform market power, through their effects on consumer behavior.

C. Mergers

Demand-side biases may also have implications for merger analysis. For example, if consumers find it hard to think about absolute quality, then they may focus their decision-making on the relative quality of different products. In this situation, we may expect firms to compete more vigorously on quality, since there is an added incentive to achieve a higher quality than rivals. This in turn means that the impact of a merger in reducing quality might be greater than would be the case in the absence of this behavioral bias.

Likewise, we know that consumer behavior is affected by how the decision facing them is framed. Consumers may be more likely to buy a particular flight ticket, if they are informed that there are only a few tickets still available at the current price. They may be more likely buy a £5 bottle of wine that was £10 yesterday than one which has always been £5, even if the £10 was never a real price.

5 Ivan Bos, Ronald Peeters & Erik Pot (2017), "Competition versus collusion: The impact of consumer inertia," Int Jnl of Economic Theory, 13: 387-400. doi:10.1111/ijet.12136.

6 This possibility is discussed in Robert Edwards, "Pricing and obfuscation with complexity averse consumers," Oxford Economic Papers, gpy053, https://doi.org/10.1093/oep/gpy053.

7 For example, an interesting behavioral justification of RPM is provided in Roman Inderst & Sebastian Pfeil, "An Image Theory of RPM," MPRA Paper 54139, March 2014, https://mpra.ub.uni-muenchen.de/54139/1/MPRA_paper_54139.pdf.

This in turn means that such framing behavior can affect competitive outcomes. Should merger assessment therefore include consideration of the impact of merger on firms' incentives when framing consumer choices? For example, how should authorities consider a takeover by one firm, which is expert in framing their offering in a misleading way, of a second firm which is more scrupulous?

IV. WHAT DOES BEHAVIORAL ECONOMICS IMPLY FOR EMPIRICAL ANALYSIS IN ANTITRUST?

Behavioral biases may also have implications for the empirical evidence and analysis typically carried out in antitrust cases.

First, there may be a need for changes to existing analytical tools. For example, standard demand estimation techniques do not typically allow for the fact that consumer purchasing behavior may be strongly affected by both their past purchasing behavior and framing effects. For example, a price reduction from £2 to £1.50 may have a very different impact on sales if the price label specifically states "Was £2, now £1.50," as opposed to the price simply changing without such labelling.

Meanwhile, consumers who exhibit loss aversion may have very different reactions to a price change depending on the direction of the change, with many more switching away on the basis of a price rise from £2 to £2.20 than would switch to the product on the basis of a price reduction from £2.20 to £2. Again, most demand estimation techniques implicitly assume symmetric reactions.

Second, behavioral biases have important implications for the effectiveness of remedies, where these are reliant on consumer behavior. For example, offering consumers a new option may have little impact on competition if they exhibit strong default or *status quo* bias. In some cases, remedies will only work well if they change the choice *architecture* facing consumers, not just the choice options. A thoughtful example was the remedy in the *Microsoft Browser* case; a "boxchoice screen" which forced consumers to make an active and unbiased choice. Following the introduction of this remedy in the EU, Internet Explorer's market share in the browser market fell significantly more rapidly in the EU than it did in the U.S., which was not subject to the remedy.[8]

Consumer reactions can, however, be hard to predict, and competition authorities can easily get this wrong. A key implication, therefore, is that authorities should carry out consumer testing of any such remedies, ideally through the use of randomized controlled trials. This is a relatively new technique for antitrust, but has become increasingly commonplace in sector regulation, at least in the UK, when putting in place new consumer-focused regulatory interventions. It has shown clear benefits in terms of helping to identify the most effective remedies.

V. DO SUPPLY-SIDE BIASES NEED TO BE CONSIDERED TOO?

Finally, and perhaps most controversially, it has to be recognized that behavioral biases may not be restricted to the demand-side of markets. Firms can exhibit them too. There is an extensive and growing literature on the tendencies of executives within firms to engage in a variety of behaviors that are not necessarily profit-maximizing, such as empire-building, maximization of stock market valuation, focus on the relative performance of the firm (rather than its absolute performance), seeking admiration through taking big risks, and even protection of market share in order to protect jobs (perhaps to avoid difficult conversations with staff being made redundant).

In some cases, these behaviors may in fact be individually rational for the executives involved, given the reward structures they face and the perceptions of shareholders and wider capital markets, which may themselves be hard to fully rationalize. However, whether individually rational or not, these apparent biases can potentially lead to anti-competitive behavior (or indeed pro-competitive behavior) which is not apparently profitable for the firm.

As has been highlighted in the existing behavioral antitrust literature, this has clear implications for antitrust, which has traditionally included a strong focus on considering the profit incentive of firms to engage in the behavior in question. This emphasis has perhaps been stronger in the U.S., where the influence of the Chicago School has been stronger. However, such thinking is present in many EU cases too, with authorities often seeking to demonstrate in their decisions that the dominant firm is likely to profit from the abusive behavior.

If we take supply-side behavioral biases seriously, however, it is far from obvious that this is still a sensible question to ask. For example, a firm may engage in a course of abusive conduct simply because its CEO wants to preserve market share for personal reasons, and irrespective of whether the behavior will be profitable. Would it be so outlandish for competition authorities to allow for such possible motivations in abuse cases?

8 See Fletcher (2016). Footnote 2.

Likewise, in the context of mergers, if some mergers are driven not by pure profitability motives but by executive reward, empire-building incentives, or potentially over-optimism or over-confidence bias, then this may be relevant to assessing their likely effects and also their efficiency justifications. Such factors may also be relevant to assessing the likelihood of successful entry post-merger, in that potential entrants may well be over-confident about their likely success in the market. Indeed, recent *ex -post* evaluation work, carried out for the CMA, found entry to have been less successful than expected in constraining post-merger competitive outcomes in four out of the eight cases reviewed.[9] Again, to what extent should the authorities take such considerations into account?

Similar supply-side biases may also justify additional scrutiny around purchaser approval for assets divested in order to gain merger clearance. The UK merger regime has sadly overseen a number of failed merger divestment remedies, most notably in a series of three grocery mergers (*Co-op/Somerfield* (2008), *Co-op/Lothian* (2009), and *Asda/Netto* (2010)) which led to the divestment, in total, of 52-54 stores to an apparently dynamic and aggressive new grocery retailer called Haldanes. The company turned out to have been unrealistically over-confident about its own chances of success. It failed in 2011, within a year of the final divestment, resulting in most of the divested stores closing down.

In the area of cartels, supply-side biases may affect the likelihood of anti-competitive agreements being formed and remaining stable. For example, collusion may be facilitated by strong trust and social links across cartel members,[10] but may be hampered by a non profit-focused human desire to be a law abiding member of society. This suggests that a successful strategy to reduce collusion may need to focus on changing culture and social norms, not just penalizing illegal cartels.

Finally, it should be noted that allowing for behavioral biases on the supply-side is not the same as accepting that firms might engage in any sort of unexplained non-rational behavior. For example, it is sometimes argued that mergers will not lead to price rises or foreclosure effects, on the basis that managers of the different divisions of the merged firm will not take each others' profits into account. Such arguments are unlikely to be credible unless there is a clear behavioral rationale, and supporting evidence, for such inaction.

VI. CONCLUSIONS

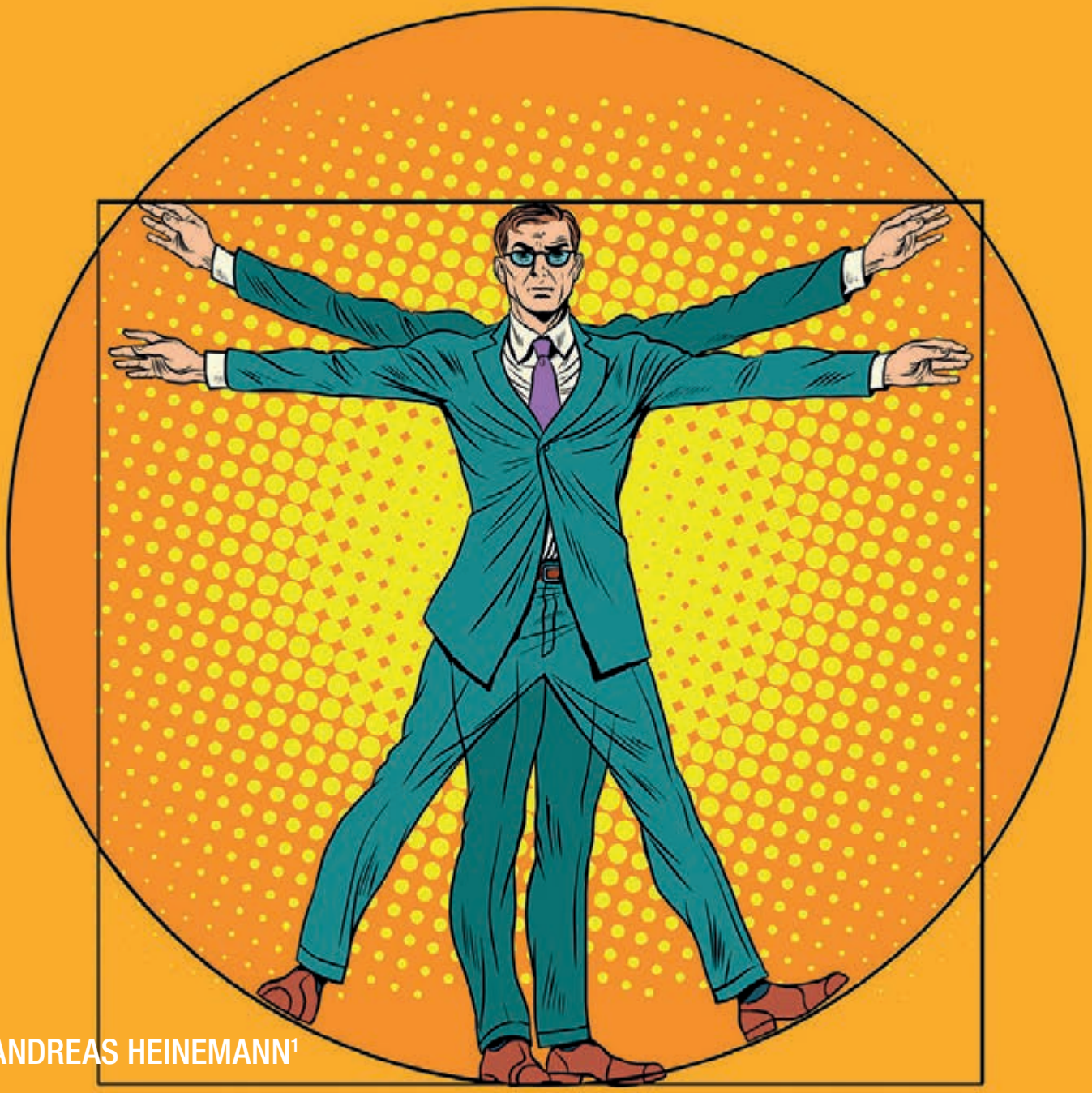
Overall, while the sum of the ideas above may be controversial, it is clear that behavioral economics is here to stay. It has already had huge influence across wide swathes of policy and law, and it seems unlikely that competition policy will be immune. Competition policy is, after all, essentially about making markets work well for consumers. It will only therefore be effective if it allows for the behavior of real markets with real consumers and real firms.

There is an extensive behavioral antitrust literature which sets out a number of potential developments. Some additional aspects are presented here. However, there may also be implications that no one has identified yet, even in theory. The academic field of behavioral economics is itself developing very quickly, and new thinking – for example, in respect of theories of harm – is highly likely to emerge. It would be reasonable to bet that we have only really seen the tip of the behavioral iceberg so far.

9 KPMG LLP, "Entry and expansion in UK merger cases: An ex-post evaluation,", April 2017, Report For Competition and Markets Authority, https://www.gov.uk/government/publications/evaluation-of-entry-and-expansion-in-uk-merger-cases.

10 See Andreas Stephan, "Cartel Laws Undermined: Corruption, Social Norms, and Collectivist Business Cultures," Journal of Law and Society, Vol. 37, Issue 2, pp. 345-367, June 2010, http://dx.doi.org/10.1111/j.1467-6478.2010.00507.x.

FACTS OVER THEORY: THE CONTRIBUTION OF BEHAVIORAL ECONOMICS TO COMPETITION LAW



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I. INTRODUCTION

In its *Google Shopping* decision, the European Commission has found that, in terms of online search, click probability depends on visibility: Whereas the search results on page 1 receive 95 percent of all clicks, the first result on page 2 only gets 1 percent.[2] In *Google Android*, the European Commission has found evidence that the Google search app is used significantly more on Android devices where it is pre-installed than on devices where users have to download it. The authority adds that pre-installation can create a status quo bias.[3] These findings are part of the facts on which the legal assessment is based. The important message sounds self-evident but has not always been respected in the past: Competition law should take as its starting point the way human beings really act and not how a "resourceful, evaluating, maximizing man" ("REMM hypothesis") is supposed to behave. A solid basis cannot be built on (rational) expectations, but must be informed by real behavior. In the two *Google* cases, the European Commission has done so by referring to experiments and surveys on the impact of search visibility or the hassle-free availability of apps on consumer behavior. In this perspective, it is not sufficient to show that users are able to consult subsequent results pages or to download competing apps. What is relevant is how they behave in practice.

Behavioral economics has yielded important insights in this respect. For example, it has been worked out that human beings do not necessarily have a constant, context-free and consistent system of preferences and that they do not always maximize their self-interest but will voluntarily incur costs in order to fight against behavior perceived as unfair. Besides, rational decision-making is impeded by a lack of willpower, by varying intellectual capacities and by an impressively long list of biases and heuristic fallacies.[4] Legal sciences have taken up these findings and applied them to virtually all sub-fields of law. The first to do it for competition law was Avishalom Tor in 2002.[5] Since then, a new approach to competition law has developed, sometimes called "Behavioral Antitrust."[6] As the above examples from the European Commission show, behavioral thinking has found its way into the practice of competition authorities, albeit at a measured pace.

This article identifies aspects of competition law which may particularly benefit from behavioral analysis. From this problem-based approach, a general lesson on the relationship between law, economics and psychology can be learned.

II. COMPETITION LAW PROBLEMS IN NEED OF BEHAVIORAL SUPPORT

The behavioral approach is of a general nature and may become relevant for all aspects of competition law. The following overview gives some examples where behavioral insights seem particularly promising. The first example, market definition, shows that there are even areas where it has always been possible, even necessary, to include behavioral insights into the legal analysis.

A. Market Definition

Market definition is key for competition law since it constitutes the point of reference for further analysis. The relevant product market comprises all products which are regarded as interchangeable by consumers. The important aspect of this definition in our context is the fact that market definition is not based on objective substitutability but on purely subjective factors, i.e. how the other market side perceives its options. What consumers would buy if they gathered information carefully and made a rational decision is not relevant. What is decisive is their real choice, no matter how irrational it may be. If a large portion of consumers show brand loyalty and do not change their preferences in spite of a small but significant non-transitory increase in price (SSNIP-test), the products belonging to that brand constitute an independent relevant market, even if there are comparable products available which can objectively be considered perfect substitutes. The concept of market definition illustrates that deviation from the rational choice paradigm is not something revolutionary for competition law. Competition law already requires taking "irrational" behavior into consideration in order to define markets correctly. The deeper explanation for this is that the concept of a market, when dealing with competition law, has a subjective rather than an objective character.

2 European Commission – *Google Search (Shopping)*, http://europa.eu/rapid/press-release_IP-17-1784_en.htm (under appeal).

3 European Commission – *Google Android*, http://europa.eu/rapid/press-release_IP-18-4581_en.htm (under appeal).

4 D. Kahneman, *Thinking, fast and slow* (London: Allen Lane 2011).

5 A. Tor, "The Fable of Entry: Bounded Rationality, Market Discipline, and Legal Policy," [2002] Michigan Law Review 101(2) 482, 548-559.

6 A. Heinemann, "Behavioural Antitrust – A 'More Realistic Approach' To Competition Law," in K. Mathis (ed.), European Perspectives on Behavioural Law and Economics (Cham: Springer 2015) 211-242.

The same is true for the competitive analysis of secondary markets regarding e.g. accessories, spare parts or services for a main product. It has been a matter of fundamental debate whether these secondary products constitute separate markets, and if so, to what extent the competitive analysis of these aftermarkets is influenced by the degree of competition at the primary market for the main product (for example printers and toner or razors and blades). The Chicago School argued that restrictions to competition in secondary markets are not harmful as long as there is sufficient competition in the market for the primary product. If customers are not satisfied with the price of accessories, spare parts, or the quality of services, they can opt for a competing main product for which secondary goods and services may be more advantageous. Yet, the behavioral approach cautions against such theoretical reasoning. If customers are subject to an underestimation bias with respect to secondary markets, competition on the main market is not able to guarantee competitive conditions for secondary products. Again, the analysis has to be based on real behavior and not on an abstract pattern. If customers are not aware of total costs and do not learn over time, competition on the primary market does not sufficiently tame the supplier's power to behave independently on the secondary market. Consequently, the analysis of secondary markets cannot be done in an abstract way, but must take into account the specific circumstances of the different markets concerned.

B. Horizontal Agreements

Horizontal agreements have not been at the heart of the behavioral discussion so far. This is because the international consensus on the harm of hardcore cartels is so strong[7] that no finer analysis has been necessary. However, recent technological developments might require further analysis. The *Eturas* case before the European Court of Justice[8] shows that the traditional categories of "agreement" and "concerted practices" find difficulties when coordination between competitors is organized by computers and algorithms. In the case at hand, a company licensing an online-booking system to travel agencies imposed on these agencies a technical restriction limiting rebates for consumers to 3 percent. Higher discounts were automatically reduced to 3 percent. It was still possible for the travel agencies to grant higher rebates, but this required additional technical steps. As a consequence, the majority of agencies previously offering higher discounts decreased them to 3 percent after the change.

Apparently, there is a default bias (or at least inertia) triggered by technical complications. If pricing becomes complicated because of automatic default settings, firms change their behavior and renounce on lower prices. This effect is of considerable relevance for competition law. Thus far, the EU Court of Justice has chosen a traditional solution for this problem: According to the court, technical restrictions implemented through a computer system are not sufficient to prove collusion. Instead, awareness of the discount cap by the parties has to be shown. The question may be asked whether "awareness" is still the appropriate category if algorithms become so autonomous that human intervention is not needed anymore in order to coordinate prices. In our view, the delegation of pricing decisions to a computer system should trigger a monitoring obligation. If uniform market behavior is due to algorithmic collusion, the firms concerned should be under a duty to stop this coordination.[9]

C. Vertical Agreements

The Chicago School has criticized traditional antitrust and – with good reason – called for sound economic analysis in competition law. The treatment of vertical restraints has been important in that regard: According to the Chicagoans, restrictions of intrabrand competition are harmless, or even efficiency-enhancing, if there is sufficient interbrand competition. Under the influence of the Chicago School, the *per se* prohibitions of certain vertical restraints in US antitrust law have been replaced by a rule of reason analysis. In EU competition law, there have never been *per se* prohibitions, but the assessment is based on the interplay of the general prohibition on restrictive agreements with the efficiency justification (Article 101 para. 1 and 3 TFEU). The details are specified in the Block Exemption Regulation on Vertical Agreements (Regulation 330/2010) and in the accompanying Guidelines on Vertical Restraints. According to these rules, restrictions to competition in vertical agreements are exempt from prohibition as long as the contracting parties do not exceed market shares of 30 percent, and under the condition that so-called "black clauses" are avoided, for example Resale Price Maintenance ("RPM") and absolute territorial protection fragmenting the EU internal market by prohibiting passive sales into territories reserved to other trade partners.

For our context, the behavioral aspects of vertical restraints are relevant. If brand loyalty is significant, the market power of the trademark owner will be increased so that interbrand competition is less intense. The argument according to which customers can opt for a competing product if they are not happy with a vertically fixed price or other vertical restraints loses weight under such circumstances. Two conclusions can be drawn in this context: First, the central message of behavioral antitrust is that competition law should not build on theoretical assumptions but on the reality of markets. And second: behavioral antitrust does not replace traditional competition law analysis, but complements it. Negative ef-

7 *Recommendation of the OECD Council Concerning Effective Action against Hard Core Cartels*, 25.3.1998, C(98)35/FINAL.

8 CJEU, 21.1.2016, C-74/14 – *Eturas*, ECLI:EU:C:2016:42.

9 A. Heinemann & A. Gebicka, "Can Computers form Cartels?," 7 Journal of European Competition Law & Practice, No. 7 (2016) 431-441.

fects of RPM have been identified in traditional industrial organization, for example that vertically fixed prices may facilitate horizontal collusion.[10] Behavioral analysis adds new aspects to that by showing that competitive pressure may be less strong due to the actual behavior of clients.

The EU Vertical Guidelines take behavioral aspects into account in some cases: For example, brand loyalty is mentioned as one of the factors which may constitute barriers to entry.[11] Moreover, branding is considered to increase product differentiation, to reduce substitutability and thus to increase prices. Therefore, the Guidelines find that vertical restraints with regard to non-branded goods and services are less harmful than for branded products.[12] These first steps towards behavioral analysis should be further developed: Competition law analysis would benefit from a more accurate record of human behavior. Preconceived theorems should be replaced by the analysis of specific market circumstances.

D. Abuse of a Dominant Position

1. Dominance

As already mentioned, behavioral analysis may have an impact on market definition that is highly relevant for the finding of a dominant position. But also, when it comes to the dominant position itself, behavioral aspects are relevant. According to the usual definition, dominance is the power to behave independently from one's competitors, customers and ultimately of consumers. Usually, the analysis starts with market shares and continues with barriers to entry, lack of countervailing buyer power, and other factors. For a dominant position to exist the reason why an entity has the power to behave independently is not relevant, only the fact that the enterprise *is* indeed in this situation. In the *Google Shopping* case, for example, the European Commission has held that the finding of Google's dominant position is not excluded by the fact that users appreciate the relevance of its search results.[13] Hence, the fact that the power to behave independently is due to one's better products or lower prices is irrelevant for the establishment of a dominant position. So too are the reasons for which consumers prefer the products of the firm in question. Even if it would be easy to switch to a competitor and even if the quality of his products would be comparable, this would not remove dominance if the consumers, for whatever reason, do not perceive them as a true alternative. Many cognitive biases may come into play here, such as inertia or the default bias. Taking up the example of search engines: If the competitor is just one click away, but users do not click on his search engine and prefer to "google it", competitive pressure is low and cannot invalidate the finding of a dominant position.[14]

2. Tying and Bundling

The Chicago School has criticized the traditional analysis of tying and bundling on the basis of the single monopoly profit theory: Only one monopoly profit can be earned. The prices for the tying and for the tied product have to be seen together; the distribution of the total price on the two products is not relevant. If there is a monopoly for the tying product, there is a reason for antitrust intervention only if this monopoly has been obtained illegally. Even in this case competition law should attack the monopoly itself but not the tying practice. Tying and bundling are, in this view, usually efficiency-enhancing or at least neutral.

Contrary to this view, game theory has shown that there should be neither *per se* illegality nor *per se* legality of tying, but a case-by-case analysis taking into account the market power for the tying product. Behavioral reasoning may enter at this stage. In the European *Microsoft* case, for example, the European Commission held that the tying of the Windows operating system (where the firm has a dominant position) and the Windows Media Player ("WMP") constituted an abuse since the ubiquitous presence of the Microsoft software blocked the access of competing media players to possible clients (customer foreclosure). The central argument has a behavioral character: Although there were no exclusivity clauses between Microsoft and OEM'S, and although consumers could have downloaded competing media players, they did not do so because "vendors must expend resources to overcome end-users' inertia and persuade them to ignore the pre-installation of WMP."[15] Thus, the European Commission did not rely on rational, but on real behavior of consumers.

10 M. Motta, *Competition Policy – Theory and Practice* (Cambridge: CUP 2004) 358-362 and the general statement at 348: "Therefore, economic analysis certainly demonstrates that vertical clauses are by no means always beneficial (contrary to what the Chicago School used to claim). Nevertheless, vertical restraints (or some of them) are not always bad."

11 European Commission, Guidelines on Vertical Restraints, OJ 2010, C 130/1, n. 117.

12 Ibid., n. 104.

13 European Commission – *Google Search (Shopping)*, n. 315 (under appeal).

14 See the analysis of user multi-homing and the existence of brand effects at European Commission – *Google Search (Shopping)*, n. 306-315 (under appeal).

15 European Commission, 24.3.2004, COMP/C-3/37.792 – *Microsoft*, n. 870.

The *Google Android* case is similar: As already mentioned in the introduction, the European Commission found an illegal tying of Google's search and browser apps to the Google Play Store which is a "must have" app. According to the European Commission, "pre-installation can create a status quo bias. Users who find search and browser apps pre-installed on their devices are likely to stick to these apps."[16] Based on empirical evidence, the Commission has for example found that the Google search app is used much more regularly on Android devices where it is pre-installed than on Windows mobile devices where it must be downloaded. Again, this is a reference to real behavior as opposed to conduct that is theoretically possible but cannot be established in practice.

3. Rebates

Rebates form part of price competition and thus are seen positively from the perspective of competition law. However, rebates may also be used in order to foreclose, for example when they are conditioned on not buying from other suppliers. Industrial economics has developed standards distinguishing between legitimate and anti-competitive rebates. Behavioral aspects should be added to the traditional analysis: The opacity of rebate conditions may make customers cling to a certain supplier in order to not lose the rebate. But even if conditions are transparent the wish to obtain a rebate may be so strong that a rational comparison between different options does not take place anymore. An example are frequent flyer programs: The prospect of receiving a reward sometimes seems to stand in the way of a sober price comparison. Again, it is up to empirical analysis to determine the real behavior of customers.

4. Predatory Pricing

Predatory pricing is recognized as a possibly anti-competitive strategy of dominant firms. However, the finer details are contested. In U.S. antitrust law we find the recoupment requirement, according to which probability has to be shown that the short-term losses due to the predation strategy will be recouped in the medium or long term. In EU competition law no such test applies: It is sufficient to show that a dominant firm charges prices that are below an appropriate measure of cost. Already under the rationality assumption the legitimacy of the recoupment test may be questioned: Why should a firm engage in below-cost practices if it did not expect compensation for losses in the future? Behavioral arguments strengthen this approach: If there is an overconfidence bias, actors may hope for a successful predation outcome although the objectively expected value is negative. On the other hand, competitors may overestimate the perseverance of the low-price campaign because they know that the firm in question will go ahead with its plan even if it will lose money. Again, taking into account the real behavior of market actors leads to more convincing solutions than hypothetical predictions of what firms should reasonably do.

E. Remedies

Behavioral insights should also be considered when it comes to the design of remedies. An example is the European *Microsoft* case. In reaction to the abusive tying of the Windows operating system with the Windows Media Player, the European Commission had imposed the duty to offer – in addition to the full program – a Windows version without the media player. This product did not have any success on the market, though. Moreover, the remedy raised concerns as to the status of innovation in the application of competition law. As the goal of competition law is not only static but also dynamic efficiency, its application must not hamper the continuing process of adding new functions and of developing products further. The European Commission emphasized this aspect in the Microsoft browser case some years later. This time it was about the integration of Internet Explorer into the Windows operating system. The case was solved by the commitment to make a ballot screen available that allowed users to download the browser of their choice instead of or in addition to Internet Explorer.[17]

From a behavioral perspective, this approach seems convincing: The ballot screen is suitable to overcoming the default bias and giving consumers an autonomous choice of the browser they are going to use. At the same time, the remedy promotes competition on the merits since the product is not chosen because of its immediate availability but because of its quality. However, overchoice has to be avoided. As the computational capacity of human beings is restricted, choice should remain manageable. Consequently, the ballot screen should not strive for completeness but contain the most important products plus a choice of the less usual products which should vary randomly.

16 European Commission – *Google Android*, Press Release (note 3), 3 (under appeal; no public version of the full decision available yet).

17 European Commission, 16.12.2009 – *Microsoft (Tying)*, OJ 2010, C 36/7. This commitment applied until 2014. For non-compliance see European Commission, 6.3.2013 – *Microsoft (Tying)*, OJ 2013, C 120/15.

III. CONCLUSION

Behavioral insights are highly relevant for competition law and work as a complement to traditional competition law analysis. The application of competition law should be based on the real behavior of economic actors instead of hypothetical assumptions. For the sphere of law, it has always been obvious that normative assessments have to be made with respect to proven facts. The behavioral approach is helpful in this regard because it aims at a more accurate description of human behavior.[18] It is not acceptable for empirical insights to be ignored because they are not compatible with economic theory. The opposite is true: The economic analysis has to be based on advances in our understanding of human behavior. Taking bounded rationality into consideration will not lead to a revolution, but can make competition law more realistic. The economic fundament of its application thus becomes more reliable. As the examples in this overview show, the "behavioral turn of competition law" has already begun.

18 See for example R. Cooter & Th. Ulen, Law & Economics, 6th edition (Boston: Pearson 2012) 51.

BEHAVIORAL FIRMS: DOES ANTITRUST ECONOMICS NEED A THEORETICAL UPDATE?

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I. INTRODUCTION

Modern day antitrust is grounded in traditional neoclassical economic theory, which assumes consumers and firms are rational, profit maximizing entities. That view was solidified in the 1986 Supreme Court majority opinion in *Matsushita* ("…as presumably rational businesses…").[2]

In contrast, behavioral economics, and the concept of bounded rationality, recognizes the real-world limitations on fully rational behavior. These limitations include constraints on time, constraints on the ability to sort through complexity, and constraints on the ability to process large amounts of information. In the bounded rationality framework, decision-makers do not make the best choice after maximizing a complex optimization problem. Rather, decision-makers make choices by taking short cuts, such as using rules-of-thumb, or through satisficing, by making a choice that exceeds some minimal acceptable level. These short cuts make complex problems more tractable.

Like consumers, firms make decisions using short cuts and rules of thumb. For example, rather than choosing a price based on a Lerner Index calculation that is derived from neoclassical economic theory or choosing a price based on the outcome of a complex linear programming model or robust A/B style testing (though some firms certainly do), many firms instead choose price by lowering or raising said price by a given percentage or dollar amount relative to a benchmark (e.g., the current price or last year's price). Similarly, firms may exhibit behavioral biases by focusing on cost minimization rather than profit maximization.

Market realities of how firms actually behave create a gap in our knowledge: How well do real world market outcomes approximate the outcomes predicted by neoclassical economic models? Are empirical simulations of post-merger prices systematically biased? Is antitrust enforcement, relying on the traditional neoclassical framework, getting it right enough of the time?

II. THE USE OF NEOCLASSICAL ECONOMIC THEORY IN ANTITRUST

There are many empirical analyses in antitrust that rely on theoretical results that flow from traditional neoclassical models.[3]

For example, one of the basic relationships in antitrust economics is the Lerner Index. The Lerner Index is an equilibrium relationship stating that a profit maximizing firm chooses its optimal price such that the firm's percentage mark-up of price over marginal cost is related to the own-price elasticity of demand faced by the firm. It is predicated on the assumption of profit maximization and the first order conditions that are derived from that optimization problem.

Using the theoretical predictions that flow from this model, if an acquisition eliminates a competitor that lowers the firm's own-price elasticity of demand, holding all else equal, then the transaction will lead to higher prices because a reduction in the own-price elasticity of demand implies that the firm will increase its gross profit margin. The underlying assumption on which this equation is derived, however, is that the firm is maximizing profits. If the firm is not maximizing short-run profits, but instead growing revenue or market share, then analyses based on the relationship between the firm's gross profit margin and its own-price elasticity of demand may not be informative when making predictions about post-merger pricing.

Relatedly, merger analysis often uses Critical Loss as an economic tool to inform the definition of the relevant market. Critical Loss uses the relationship between a firm's gross profit margin and its own-price elasticity of demand derived from traditional economic models, coupled with an estimate of the acquiring firm's gross profit margin to draw inferences about the elasticity of demand. However, if the firm's short-run goal is something other than profit maximization, then an analysis based on a flawed inference about the firm's own-price elasticity of demand drawn from the firm's gross profit margin may not be useful for making predictions about post-merger market power and post-merger pricing. The problem arises not in estimating the own-price elasticity of demand econometrically but in deriving the "critical" own-price elasticity of demand from a theoretical relationship with the firm's gross profit margin.[4]

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2 The dissenting opinion in *Matsushita*, written by Justice White, notes that firms may pursue objectives other than profit maximization. Specifically, the dissenting opinion states that the majority consistently assumed the firms at issue were pursuing near-term profit maximization rather than an alternative objective such as growth.

3 See, for example, Elizabeth M. Bailey, "Behavioral Economics and U.S. Antitrust Policy," *Journal of Industrial Organization*: Volume 47, Issue 3 (2015), pp. 355-66.

4 Issues with the Lerner Index and Critical Loss can arise from the consumer-side as well. For example, reference-based preferences, such as when consumers respond disproportionately to price increases compared to price decreases, can give rise to a demand curve with an outward kink at current prices. This kink means the demand curve is more elastic for price increases (above the kink) than for price decreases (below the kink). One implication of a demand curve with a meaningful kink at current prices is that the Lerner Index will not hold because the marginal revenue curve will be discontinuous at the prevailing price.

The weight given to marginal cost (or variable cost) savings over fixed cost savings is also predicated on comparative statics of results from neoclassical theoretical economic models. Traditional neoclassical economic models predict that variable cost savings, such as lower per unit input costs, are more likely to lead to lower prices post-merger than fixed cost savings, such as lower overhead costs. For this reason, more weight is given to efficiencies generated from variable cost savings than those generated from fixed cost savings. But if traditional neoclassical economic models do not adequately describe how firms set prices, then too little credit may be given to fixed cost savings. For example, if an acquiring firm sets prices taking account of fixed costs, such as full cost pricing methodologies, then a reduction in fixed costs may likewise lead to lower prices.

III. A GROWING BODY OF LITERATURE

Although the U.S. antitrust agencies rely on a profit maximization assumption for assessing competitive effects,[5] economic models are simplifications of the real world.

To the extent antitrust policy credits behavioral economics, it tends to focus on how firms modify their rational, profit-maximizing behavior to take advantage of the ways in which consumers deviate from the traditional neoclassical model. The strategic use of defaults, benchmarks, framing, and complexity may all be ways for firms to take advantage of behavioral, not perfectly rational, consumers.[6] Firms' modifying their behavior to take advantage of consumer behavior has implications for the enforcement of consumer protection policies that are designed to protect them from unfair or deceptive practices.

Two arguments are typically made for continuing to treat firms as rational, profit-maximizing entities but making allowances for consumers to depart from neoclassical theory. First, firms have greater financial resources than consumers, which allows firms to access a wide array of consultants and advisors who can assist in information processing and making optimal pricing decisions. Second, firms that systematically and persistently fail to maximize profits are unlikely to survive in the long-run due to competition.

Other defenses given to justify the assumption that firms are fully rational and maximize profits include: profit maximization is a pretty good approximation most of the time; firms learn the optimal outcome overtime; firms make one-off mistakes but these mistakes average out across a large population of firms; rules of thumb lead to outcomes that approximate the outcome that would result from a complex optimization problem; profit maximization is analytically easy from a theoretical perspective; and if profit maximization (which often gives one unique solution) is not assumed, then there are too many other possible outcomes. These may be good and correct arguments, but they are based on reasoning, not empirical evidence.

There is an active and growing body of empirical evidence from the economics literature, largely in the field of finance, of firm behavior that departs from strict profit maximization.[7]

For example, Graham & Harvey (2001) show that, while neoclassical economic theory predicts Net Present Value is the optimal investment decision rule for firms making capital budgeting decisions, many Chief Financial Officers report that in practice they make capital budgeting decisions based on short cuts and rules of thumb, such as the Internal Rate of Return rule, various versions of the "Payback" rule, and the "Profitability Index" rule.[8] Malmendier & Tate (2005) show empirically that firms with overconfident CEOs systematically make corporate-level

5 See the 2010 Department of Justice and Federal Trade Commission 2010 Horizontal Merger Guidelines, available at: https://www.justice.gov/sites/default/files/atr/legacy/2010/08/19/hmg-2010.pdf. See also comments submitted during the DOJ and FTC revisions to the Horizontal Merger Guidelines in 2010 which credit "the working assumption of profit maximization as the best starting point for competition analysis," available at https://www.ftc.gov/sites/default/files/documents/public_comments/horizontal-merger-guidelines-review-project-proposed-new-horizontal-merger-guidelines-548050-00017/548050-00017.pdf at p. 1.

6 See, for example, a Summary Report from a 2007 FTC Conference on Behavioral Economics and Consumer Policy, available at: https://www.ftc.gov/sites/default/files/documents/reports/summary-report-ftc-behavioral-economics-conference/070914mulhollandrpt.pdf.

7 In addition to the empirical economic papers discussed below, other empirical economic papers documenting non-profit maximizing behavior by firms include: Steven Levitt (2006), "An Economist Sells Bagels: A Case Study in Profit Maximization," NBER Working Paper Number 12152 dated April 2006 (empirical evidence that the prices set by a bagel firm sustain long-run systematic deviations from profit maximization); David Romer (2006), "Do Firms Maximize? Evidence from Professional Football," *Journal of Political Economy*, 114(2): 340-365 (empirical evidence that decisions made by NFL teams depart from optimal decision-making, with choices selected that are more conservative than maximization predicts are optimal); and Armstrong, M., & Huck, S. (2010), "Behavioral Economics as Applied to Firms: A Primer," *Competition Policy International*, 6(1), 2–45 (survey of empirical evidence that firms depart from the profit maximizing paradigm through the use of satisficing behavior and rules-of-thumb).

8 John Graham & Campbell Harvey (2001), "The Theory and Practice of Corporate Finance: Evidence from the Field," *Journal of Financial Economics*, Vol. 60. See also John Graham & Campbell Harvey (2002), "How Do CFOs Make Capital Budgeting and Capital Structure Decisions?," *Journal of Applied Corporate Finance*, Vol. 15, No. 1, Spring.

investment decisions that diverge from the optimal.[9] Bubb & Kaufman (2013) identify empirical evidence of systematically different pricing for credit cards offered by investor-owned banks as compared to the credit cards offered by credit unions, depository institutions that are mutual institutions owned by their customers.[10] Similarly, Eliason et. al. (2018) provide empirical evidence of systematically different profit-making behavior at dialysis facilities owned by independents compared to dialysis facilities owned by large chains by comparing the location-specific treatment strategies made pre-acquisition versus post-acquisition.[11] As well, a recent working paper by DellaVigna & Gentzkow (2017) finds empirical evidence, based on Nielsen scanner data, that supermarket, drug store, and mass merchandise retailers often charge uniform prices, thereby deviating from the benchmarks of traditional profit maximization.[12]

IV. IS IT TIME FOR AN UPDATE?

How closely a model's assumptions track actual firm behavior determines, in part, how useful traditional neoclassical economic models are for predicting potential anti-competitive effects. For these reasons, the economic models employed must be ones that fit the facts on the ground.

There are a limited, but slowly growing, number of antitrust precedents for the reliance on behavioral assumptions. For example, in the 1991 Ivy League Financial Aid Price Fixing Agreement Litigation, the Department of Justice argued that, by collectively agreeing on financial aid packages, universities were competing less aggressively in their financial aid offers to students. The universities argued that the use of the neoclassical economic model was inappropriate in this circumstance because the schools were non-profit entities not profit-maximizing entities. The Third Circuit Court of Appeals agreed with the Massachusetts Institute of Technology that a strict reliance on the neoclassical model was inappropriate given the non-profit objective function of the universities. In remanding the case back to the district court, the appeals court instructed the district court to consider the potential for the collective financial aid agreement to increase welfare.

There are also examples of personal objectives, not profit maximizing objectives, weighing in on antitrust considerations. First, in 2001, the Federal Trade Commission ("FTC") closed its investigation into Genzyme Corporation's acquisition of Novazyme Pharmaceutical, two firms that conducted early studies into treatment for a rare genetic disorder that affects infants and children. While not explicitly using the term behavioral economics, the FTC appears to have recognized circumstances that may dictate a departure from the strictly rational, profit-maximizing economic model in favor of fact-specific behavioral considerations. In closing the investigation, the then-Chairman of the FTC noted that the structure of the Genzyme/Novazyme transaction "strongly suggest[ed]" that the transaction would not dampen incentives to develop a treatment because the manager that would be in charge of the research program post-transaction had two children afflicted with the disease. Similarly, in the mid-1990s, the FTC went to court to block a proposed merger between Butterworth Health Corporation and Blodgett Memorial Medical Center, two non-profit acute-care hospitals located in Grand Rapids, Michigan. A U.S. district court denied the FTC's request for a preliminary injunction finding that the non-profit status of the merging hospitals would result in the combined entity having a different objective post-merger than if the merging hospitals were for-profit. As well, the district court gave credit to the composition of the board of directors post-merger, noting that the individuals on the board were members of the local community and therefore were unlikely to make decisions that were consistent with strict profit-maximization post-merger.

9 Ulrike Malmendier & Tate, G. (2005), "CEO Overconfidence and Corporate Investment," *Journal of Finance*, 60(6), 2661–2700.

10 Bubb, R., & Kaufman, A. (2013), "Consumer Biases and Mutual Ownership," *Journal of Public Economics*, 105, 39–57.

11 Paul J. Eliason, Benjamin Heebsh, Ryan C. McDevitt & James W. Roberts, "How Acquisitions Affect Firm Behavior and Performance: Evidence from the Dialysis Industry," Working paper dated June 18, 2018, available at https://www.ftc.gov/system/files/documents/public_events/1349883/eliasonheebshmcdevittroberts.pdf.

12 DellaVigna, S, & Gentzkow, M. (2017), "Uniform Pricing in US Retail Chains," Working Paper dated November 7, 2017.

V. CONCLUSION

Predicting competitive effects is not easy and no economic model predicts the future with certainty. When facts matter, as they do in antitrust investigations, one-size-fits-all approaches are inadequate. A more expansive toolkit is neither aligned with an aggressive pro-enforcement agenda nor with a more lenient antitrust enforcement agenda. Rather, a more expansive toolkit provides additional tools to get it right.

Understanding how consumers and firms make decisions is fundamental to antitrust because the assumptions made are central to predicting competitive dynamics post-transaction. How close the assumptions made in an economic model come to approximating actual behavior determines, in part, how useful the model is in predicting potential anticompetitive effects. To the extent there are situations in which the fact pattern shows that firm behavior does not match well with traditional assumptions, such as growing revenue or increasing market share, predictions based on neoclassical models may be off directionally. If a firm is pursuing an objective other than profit maximization, even in the short or medium run, it makes sense to consider whether it is appropriate to apply a theoretical economic model that assumes strict profit-maximization.

Because the empirical literature in finance and economics has provided a growing collection of real-world examples of the ways in which firms depart from profit maximization, it makes sense to fill this gap in our knowledge. How well do the market outcomes from behavioral firms approximate the market outcomes predicted by neoclassical economic models? Does the evidence provide a basis to conclude that neoclassical economic assumptions allow antitrust policy to get it right enough of the time?

BEHAVIORAL ECONOMICS AND ANTITRUST LAW: HINDSIGHT BIAS

BY CHRISTOPHER R. LESLIE[1]

1 Chancellor's Professor of Law, University of California Irvine School of Law. This is a significantly abridged version of an article recently published in the *Vanderbilt Law Review* and presented here with permission of its editors. For elaboration and greater support of the ideas in the essay, please see Christopher R. Leslie, *Hindsight Bias in Antitrust Law*, 71 Vand. L. Rev. 1527 (2018).

I. INTRODUCTION

Predicting what the probable future looked like in the past from the vantage point of the known future is fraught with peril. If the factfinder knows what actually happened, this information will influence the calculation of what the probabilities were before it actually happened. The task of estimating past probabilities of something happening when one knows what has actually happened is so notoriously difficult, that it has its own designation: the risk of hindsight bias.

The modern field of study into hindsight bias was launched by Baruch Fischhoff.[2] Fischhoff provided his research subjects with a primer on the 1810s conflict between British forces and Nepalese Gurkhas near northern India. He suggested four possible outcomes: British victory, Gurkha victory, a peace settlement, and a military stalemate with no peace settlement. The subjects were then divided into five groups. One group was given no information about the ultimate outcome of the conflict. Subjects in each of the remaining four groups were told that one of the four outcomes had, in fact, occurred. The subjects were then asked to assess the probability of each of the outcomes at the time that the conflict began. On average, the members of each group thought that the outcome that they had been told occurred was the most likely outcome *a priori*, even though they had been instructed to ignore what they "knew" about the ultimate outcome. Fischhoff's studies effectively created the field of research on hindsight bias.

The potential for hindsight bias exists whenever a person is tasked with determining the *ex ante* probability of an event after the fact. If people learn that the event did not, in fact, occur, they are more likely to believe that the *before-the-fact* probability of the event occurring was relatively low. Conversely, if people learn that the event did later occur, they are more likely to say that the event was highly probable – perhaps inevitable – all along. This phenomenon is hindsight bias, the "using [of] known outcomes to assess the predictability at some earlier time of something that has already happened."[3] Because of hindsight bias, "[p]eople overstate their own ability to have predicted the past and believe that others should have been able to predict events better than was possible."[4]

Once people learn the actual outcome of an event or a plan, they cannot replicate the uncertainty that existed before they knew the outcome.[5] Hindsight bias makes outcomes seem inevitable in retrospect and "people consistently exaggerate what could have been anticipated in foresight."[6] Hindsight bias has been well documented in many areas of law.[7] Indeed, hindsight bias can affect all of the major participants in the litigation process. Witnesses predicting probability could be influenced by hindsight bias.[8] Hindsight bias prevents jurors from properly calculating probabilities[9] and may make "juries believe that litigants should have predicted events that no one could have predicted…"[10] And several studies have shown judges to be prone to hindsight bias in several contexts.[11]

2 Baruch Fischhoff, *Hindsight ≠ Foresight: The Effect of Outcome Knowledge on Judgment Under Uncertainty,* 1 J. Exp. Psych. 288 (1975).

3 Chris Guthrie, Jeffrey J. Rachlinski & Andrew J. Wistrich, *Inside the Judicial Mind*, 86 Cornell L. Rev. 777, 803 (2001).

4 *Id.* at 799.

5 Jennifer D. Campbell & Abraham Tesser, *Motivational Interpretations of Hindsight Bias: An Individual Difference Analysis*, 41 J. Personality 605, 605 (1983).

6 Fischhoff, *supra* note 3 at 341.

7 Leslie, *Hindsight Bias, supra* note 1 at 1535-39 (collecting authorities).

8 Scott A. Hawkins & Reid Hastie, *Hindsight: Biased Judgments of Past Events after the Outcomes Are Known*, 107 Psych. Bull. 311, 318 (1990).

9 Christine Jolls, Cass R. Sunstein & Richard Thaler, *A Behavioral Approach to Law and Economics*, 50 Stan. L. Rev. 1471, 1522 (1998).

10 Guthrie, Rachlinski & Wistrich, *supra* note 3 at 780 (citations omitted).

11 *Id.* at 803.

II. HINDSIGHT BIAS IN ANTITRUST JURISPRUDENCE

This essay discusses how hindsight bias can affect decisions in three areas of antitrust law: attempted monopolization, predatory pricing, and anticompetitive conspiracies.

A. Attempted Monopolization

In *Spectrum Sports, Inc. v. McQuillan*,[12] the Supreme Court created a three-element test for attempted monopolization: "(1) … the defendant has engaged in predatory or anticompetitive conduct with (2) a specific intent to monopolize and (3) a dangerous probability of achieving monopoly power."[13] The third element focuses on probability because, by definition, attempted monopolization is "an unsuccessful attempt to achieve monopolization."[14] This dangerous probability of success must be calculated at the time that the defendant began engaging in the challenged anticompetitive conduct.[15] One reason for analyzing the dangerous probability element at the time of the anticompetitive conduct – instead of in retrospect – is to avoid the possibility of hindsight bias. For example, the Fifth Circuit has explained that "[w]hen evaluating the element of dangerous probability of success, we do not rely on hindsight but examine the probability of success at the time the acts occur."[16]

Contrary to the rule that the dangerous probability of monopolization element should be evaluated as of the time when the defendant engaged in anticompetitive conduct, several courts have invited hindsight bias by examining the defendant's market performance in the years after its anticompetitive conduct. Most notably, the Seventh Circuit held that the defendant's "subsequent market performance" is relevant to determining whether defendants in attempted monopolization cases ever had a dangerous probability of monopolization.[17] Several courts have since relied on the Seventh Circuit precedent to hold that in calculating the probability that the defendant's anticompetitive conduct would result in monopolization, factfinders may consider "the defendant's subsequent market performance," among other variables.[18]

Despite courts claiming that they will not treat subsequent market performance as dispositive, attempted monopolization jurisprudence is littered with examples of courts falling victim to hindsight bias. In *Lektro-Vend Corp. v. Vendo Corp.*,[19] for example, the plaintiff challenged the defendant's imposition and enforcement of illegal restrictive covenants as an attempt to monopolize the relevant market of coin-operated vending machines for the sale of food, beverages, and cigarettes in the United States. Although the challenged conduct occurred in 1959, the court focused on the defendant's declining market share in the early 1960s through the mid-1970s.[20] In doing so, the district court opined that "rather than speculating as to what would happen in the future (as most courts must of necessity do in evaluating alleged attempts to monopolize), this court has the benefit of observing what actually happened in the marketplace. [The defendant] did not achieve a monopoly or come dangerously close."[21] This is the very definition of hindsight bias: The court used the actual outcome to conclude that the *ex ante* probability of monopolization was impermissibly low. The court said that the defendant's failure was "not dispositive" but then essentially treated it so.[22]

Antitrust opinions exhibit potential hindsight bias in attempted monopolization cases in a number of ways. For example, some courts commit hindsight bias by asking whether any market entry occurred after the defendant began its anticompetitive conduct.[23] More commonly, courts hold that if the defendant's market share decreases after it has begun engaging in anticompetitive conduct, then there cannot have been

12 506 U.S. 447 (1993).

13 *Id.* at 456.

14 *Multiflex, Inc. v. Samuel Moore & Co.*, 709 F.2d 980, 990 (5th Cir. 1983); *Taylor Publ'g Co. v. Jostens, Inc.*, 216 F.3d 465, 474 (5th Cir. 2000) ("[A]ttempted monopolization claim necessarily involves conduct which has not yet succeeded....").

15 See Leslie, *Hindsight Bias, supra* note 1 at 1542-43 (collecting cases).

16 *United States v. American Airlines, Inc.*, 743 F.2d 1114, 1118 (5th Cir.1984).

17 *Lektro-Vend Corp. v. Vendo Co.*, 660 F.2d 255, 270-71 (7th Cir. 1981).

18 See, e.g. *G. Heileman Brewing Co. v. Anheuser-Busch Inc.*, 676 F. Supp. 1436, 1474 (E.D. Wis. 1987), aff'd, 873 F.2d 985 (7th Cir. 1989).

19 500 F. Supp. 332, 335 (N.D. Ill. 1980), *aff'd sub nom. Lektro-Vend Corp. v. Vendo Co.*, 660 F.2d 255 (7th Cir. 1981).

20 *Lektro-Vend Corp.*, 660 F.2d at 270.

21 *Lektro-Vend Corp.*, 500 F. Supp. at 356.

22 *Id.* See Leslie, *Hindsight Bias, supra* note 1 at 1547 (discussing appellate reasoning in *Lektro-Vend Corp.*).

23 *Savory Pie Guy, LLC v. Comtec Indus., Ltd.*, No. 14 CV 7527 (VB), 2016 WL 7471340, at *11 (S.D.N.Y. Dec. 28, 2016).

a dangerous probability of monopolization.[24] Many courts have treated the defendant's subsequent loss of market share as sufficient to defeat an attempted monopolization claim.[25] Other courts commit hindsight bias by focusing on the defendant's market share after antitrust litigation is filed.[26] It is not uncommon for courts to invoke a defendant's post-complaint market share to assert that pre-complaint it had no probability of monopolizing the market.[27] Such use of post-conduct evidence to calculate *ex ante* probabilities is the essence of hindsight bias.

Courts also routinely hold that a plaintiff's attempted monopolization claim must fail as a matter of law if the plaintiff cannot prove that the defendant currently possesses monopoly power.[28] In a similar vein, courts sometimes look at the defendant's market share at the time of the trial in order to hold that no dangerous probability of success existed previously when the defendant engaged in the challenged anticompetitive conduct.[29] Many courts point to a plaintiff's ultimate profitability, success, or survival as proof that the defendant never possessed a dangerous probability of monopolizing the market. For example, the Second Circuit has reasoned that because the plaintiff "has remained an effective competitor" with the defendant despite the latter's exclusionary conduct, the plaintiff's "claim of attempted monopolization is without merit."[30] In some opinions that exhibited hindsight bias, a strong case can be made that the bias led the court to improperly dispose of the case.[31]

B. Predatory Pricing

Hindsight bias in antitrust law is not limited to evaluating the "dangerous probability of success" element of attempted monopolization claims. It also arises in predatory pricing cases. In *Brooke Group v. Brown & Williamson Tobacco Corp.*,[32] the Supreme Court articulated a two-element test for illegal predatory pricing: (1) the defendant is charging a price that is below an "appropriate measure" of its costs;[33] and (2) the defendant had "a dangerous probability[] of recouping its investment in below-cost prices."[34] The probability of recoupment should be determined at the time that the defendant began engaging in below-cost pricing.

Because the antitrust cause of action for predatory pricing asks factfinders to determine *ex ante* probabilities, it presents a risk of hindsight bias. Courts succumb to hindsight bias when they hold that judges evaluating predatory pricing claims should "explore not only whether recoupment was possible but also whether it in fact occurred."[35] Some federal courts have dismissed predatory pricing complaint that allege a dangerous probability of the defendant controlling long-term prices "but fail[] to allege *actual recoupment* of losses, or any other facts allowing such an inference."[36] Examining the post-predation period invites hindsight bias because "it would be difficult for anyone to conclude both that recoupment had utterly failed and that [during the predation period, the defendant] had been likely to succeed."[37]

C. Anticompetitive Conspiracies

Attempted monopolization and predatory pricing claims are susceptible to hindsight bias, in part, because they require the factfinder to determine *ex ante* probabilities in an *ex post* world. But even antitrust claims that do not require calculating *ex ante* probabilities can induce hindsight bias. Even though a failed anticompetitive conspiracy violates Section One, hindsight bias exists in the evaluation of Section One claims. The progenitor

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24 *McGahee v. N. Propane Gas Co.*,658 F. Supp. 189 (N.D. Ga. 1987), rev'd, 858 F.2d 1487 (11th Cir. 1988).

25 *See* Leslie, *Hindsight Bias, supra* note 1 at 1549 (collecting cases).

26 *Nifty Foods Corp. v. Great Atl. & Pac. Tea Co.*, 614 F.2d 832, 841 (2d Cir. 1980).

27 See Leslie, *Hindsight Bias, supra* note 1 at 1550 (collecting cases).

28 *Indiana Grocery Co. v. Super Valu Stores, Inc.*, 864 F.2d 1409 (7th Cir. 1989).

29 *Buehler AG v. Ocrim S.p.A.*, 836 F. Supp. 1305 (N.D. Tex. 1993), *aff'd sub nom.* Buehler AG v. Ocrim SpA, 34 F.3d 1080 (Fed. Cir. 1994); *Deauville Corp. v. Federated Dep't Stores, Inc.*, 756 F.2d 1183 (5th Cir. 1985).

30 *Twin Labs., Inc. v. Weider Health & Fitness*, 900 F.2d 566, 571 (2d Cir. 1990).

31 See Leslie, *Hindsight Bias, supra* note 1 at 1553-54 (discussing *Buehler AG*).

32 509 U.S. 209 (1993).

33 *Id.* at 222-23.

34 *Id.* at 224.

35 *Ashkanazy v. I. Rokeach & Sons, Inc.*, 757 F. Supp. 1527, 1543 (N.D. Ill. 1991) (discussing *Rose Acre*, 881 F.2d at 1403-04).

36 *Edgenet, Inc. v. GS1 AISBL*, 742 F. Supp. 2d 997, 1013 (E.D. Wis. 2010) (dismissing predatory pricing claim for failure to sufficiently plead antitrust injury) (emphasis added).

37 Stephen Calkins, *The October 1992 Supreme Court Term and Antitrust: More Objectivity Than Ever*, 62 Antitrust L.J. 327, 401 (1994).

of hindsight bias in Section One jurisprudence is the Supreme Court's decision in *Matsushita Elec. Indus. Co., Ltd. v. Zenith Radio Corp*.[38] After describing predatory-pricing conspiracies as irrational – because they require upfront losses with uncertain or unlikely recoupment[39] – and noting the alleged conspiracy had been ongoing for 20 years,[40] the *Matsushita* majority concluded: "The alleged conspiracy's failure to achieve its ends in the two decades of its asserted operation is strong evidence that the conspiracy does not in fact exist."[41] The *Matsushita* rationale has allowed lower courts to hold that if an alleged conspiracy has failed, then it is implausible that the conspiracy ever existed.[42]

III. HOW HINDSIGHT BIAS UNDERMINES/REWRITES ANTITRUST DOCTRINE

When courts succumb to hindsight bias, judges can alter substantive antitrust doctrine. Section Two of the Sherman Act separately condemns a defendant's illegal acquisition and attempted acquisition of monopoly power. In the context of attempt claims, courts recognize that "the Sherman Act's prohibition against attempted monopolization does not require that the attempt in fact ripen into an actual monopoly. It is the attempt which is the offense."[43] Successful monopolization is not part of an attempted monopolization claim; successful monopolization is a separate antitrust cause of action with its own elements.

Hindsight bias changes this dynamic. If courts accept defendants' invitations to review probabilities in hindsight, then the "failure of the alleged monopoly scheme proves there was never any 'dangerous probability' of its success. Such a conclusion would undermine most attempt claims."[44] Examining the would-be monopolist's success or failure in retrospect comes close to eliminating attempted monopolization as an antitrust claim altogether. As the Seventh Circuit correctly observed, "A subsequent failure to achieve monopoly status cannot itself vitiate a claim of attempted monopoly where other evidence substantially supports the attempt without eviscerating the entire attempt offense."[45] In effect, hindsight bias surreptitiously reads the attempted monopolization language out of the Sherman Act altogether.[46] This is a mistake because even failed attempts to monopolize a market impose antitrust injury.[47]

Predatory pricing law requires only that the predator have a dangerous probability of recouping its losses, not that it actually do so.[48] However, when courts suggest that factfinders should interpret an absence of actual recoupment as evidence that there was never a dangerous probability of recoupment, they effectively amend antitrust law to require actual recoupment without acknowledging that they are doing so. Such a change in substantive antitrust law is not warranted because predatory pricing inflicts significant injury even without recoupment.[49]

Hindsight bias can also fundamentally distort antitrust law on conspiracies. *Per se* violations of Section One of the Sherman Act do not have an efficacy requirement. For *per se* violations, plaintiffs do not have to show any market effects; anticompetitive effects are presumed as a matter of law. Antitrust law does not limit its condemnation to successful cartels.[50] Any agreement to fix price is illegal, whether successful or not.[51]

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38 475 U.S. 574 (1986).

39 475 U.S. at 588-89.

40 *Id.* at 591.

41 *Id.* at 592; see also Randolph Sherman, *The* Matsushita *Case: Tightened Concepts of Conspiracy and Predation?*, 8 Cardozo L. Rev. 1121, 1131 (1987).

42 See, e.g. *Williamson Oil Co. v. Philip Morris USA*, 346 F.3d 1287 (11th Cir. 2003). See Leslie, *Hindsight Bias, supra* note 1 at 1563-65 (discussing *Williamson* in detail).

43 *Lektro-Vend Corp. v. Vendo Co.*, 660 F.2d 255, 270-71 (7th Cir. 1981) (*citing Kearney & Trecker Corp. v. Giddings & Lewis, Inc.*, 452 F.2d 579 (7th Cir. 1971)).

44 *White Mule Co. v. ATC Leasing Co. LLC*, 540 F. Supp. 2d 869, 893 (N.D. Ohio 2008).

45 *Lektro-Vend Corp.*, 660 F.2d at 270–71. Unfortunately, the Seventh Circuit went on to say that circuit law did "not forbid consideration of subsequent market performance to evaluate the existence of the alleged attempt..." *Id.* The court was seemingly unaware how considering such subsequent market performance invites hindsight bias.

46 See *Multistate Legal Studies, Inc. v. Harcourt Brace Jovanovich Legal & Prof'l Publications, Inc.*, 63 F.3d 1540, 1554 (10th Cir. 1995) ("Because we are talking about probabilities, it is not necessary for a defendant to already possess monopoly power in the target market; indeed, if it did, the offense would be monopolization, not attempt.")

47 See Leslie, *Hindsight Bias, supra* note 1 at 1575-76.

48 *Brooke Grp. Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 251 (U.S. 1993) (Stevens, J., dissenting).

49 Christopher R. Leslie, *Predatory Pricing and Recoupment*, 113 Colum. L. Rev. 1695, 1741-44 (2013).

50 *Plymouth Dealers' Ass'n of No. Cal. v. United States*, 279 F.2d 128, 133 (9th Cir. 1960).

51 See Leslie, *Hindsight Bias, supra* note 1 at 1580 (collecting cases).

Hindsight bias can essentially amend antitrust law by imposing an effectiveness requirement on price-fixing and other *per se* claims in cases where the plaintiffs are proving an agreement through circumstantial evidence. When courts equate a lack of efficacy with an absence of agreement, judges are effectively rewriting the Sherman Act. If plaintiffs cannot prove an agreement absent proof of that conspiracy's success, then the agreement alone is no longer illegal – at least in cases where the claim is being proven with circumstantial evidence. Hindsight bias risks undermining antitrust law's *per se* rule because it is inconsistent to say that a conspiracy does not have to be successful, but then to hold that if alleged conspiracy is not successful that that is strong evidence that the conspiracy never occurred.

IV. HAVING THE FORESIGHT TO PREVENT HINDSIGHT BIAS IN ANTITRUST LITIGATION

Given the existence of hindsight bias in antitrust litigation and its power to surreptitiously undermine antitrust doctrine, courts should take appropriate steps to prevent hindsight bias from infecting antitrust litigation. Unfortunately, traditional mechanisms cannot solve the problem. For example, jury instructions cannot eliminate hindsight bias. Subjects in hindsight bias experiments do not ignore outcomes even when told to do so.[52] Indeed, the very nature of hindsight bias may prevent juries from ignoring evidence that they have been admonished to disregard.[53] Once a person knows the actual outcome, it is all but impossible to eliminate the effects of hindsight bias.

Another possible solution would be to rely more on judges rather than juries to make factual determinations about elements of antitrust claims that are susceptible to hindsight bias. However, relying on judges instead of juries does not eliminate hindsight bias[54] because in most situations, judges also exhibit hindsight bias.[55] Judges cannot avoid hindsight bias because it is not deliberate; it is a cognitive bias that happens subconsciously.[56] Controlled experiments using actual judges demonstrate that judges are influenced by inadmissible evidence.[57]

The most effective way to address hindsight bias by antitrust juries is for judges to suppress evidence of subsequent market performance. In non-antitrust contexts, legal scholars have noted that "[t]he best way to prevent inadmissible information from influencing jurors is to shield them from it altogether."[58] There is no obvious downside to not letting jurors know subsequent market performance.[59] It is not part of an attempted monopolization or predatory pricing claim under Section Two or a *per se* claim under Section One.

After documenting hindsight bias in many legal contexts, Professors Wistrich, Guthrie & Rachlinski advocated a greater reliance on juries as a solution.[60] Judges can shield jurors from information that may lead to hindsight bias.[61] The professors reasoned that "when the only means of avoiding the effect of a cognitive illusion is to restrict access to the information that triggers it, a jury trial has a substantial advantage over a bench trial."[62]

The rules of evidence provide a sound basis for excluding evidence that invites hindsight bias. In non-antitrust contexts, courts have noted that hindsight bias can render evidence of subsequent events more prejudicial than probative and thus inadmissible.[63] The risk of hindsight bias

52 David B. Wexler & Robert F. Schopp, *How and When to Correct for Juror Hindsight Bias in Mental Health Malpractice Litigation: Some Preliminary Observations*, 7 Behavioral Sciences & the Law 485, 487-88 (1989).

53 Hawkins & Hastie, *supra* note 8 at 319; Jonathan D. Casper, Kennette Benedict, & Jo L. Perry, *Juror Decision Making, Attitudes, and the Hindsight Bias*, 13 L. & Human Behav. 291, 309 (1989).

54 Guthrie, Rachlinski & Wistrich, *supra* note 3 at 801.

55 *Id.* at 818 ("[J]udges in our study exhibited hindsight bias to the same extent as mock jurors and other laypersons."); *id.* at 804 ("[O]ur findings are consistent with other studies showing that judges are vulnerable to the hindsight bias.").

56 *Id.* at 804 ("When predicting the likelihood of something after the fact, judges cannot help but rely on facts that were unavailable before the fact.").

57 Andrew J. Wistrich, Chris Guthrie & Jeffrey J. Rachlinski, *Can Judges Ignore Inadmissible Information? The Difficulty of Deliberately Disregarding*, 153 U. Pa. L. Rev. 1251, 1259 (2005) ("[W]e found that some types of highly relevant, but inadmissible, evidence influenced the judges' decisions.").

58 *Id.* at 1253.

59 Jolls, Sunstein & Thaler, *supra* note 9 at 1529 ("If hindsight bias is unimportant, then whether jurors are told what outcome occurred should not matter; either way, they should be able to make a correct ex ante determination.").

60 Guthrie, Rachlinski & Wistrich, *supra* note 3 at 821.

61 Wistrich, Guthrie & Rachlinski, *supra* note 57 at 1259 ("[W]e contend that jury trials should be favored over bench trials because judges can shield jurors from inadmissible information in ways that they cannot shield themselves.").

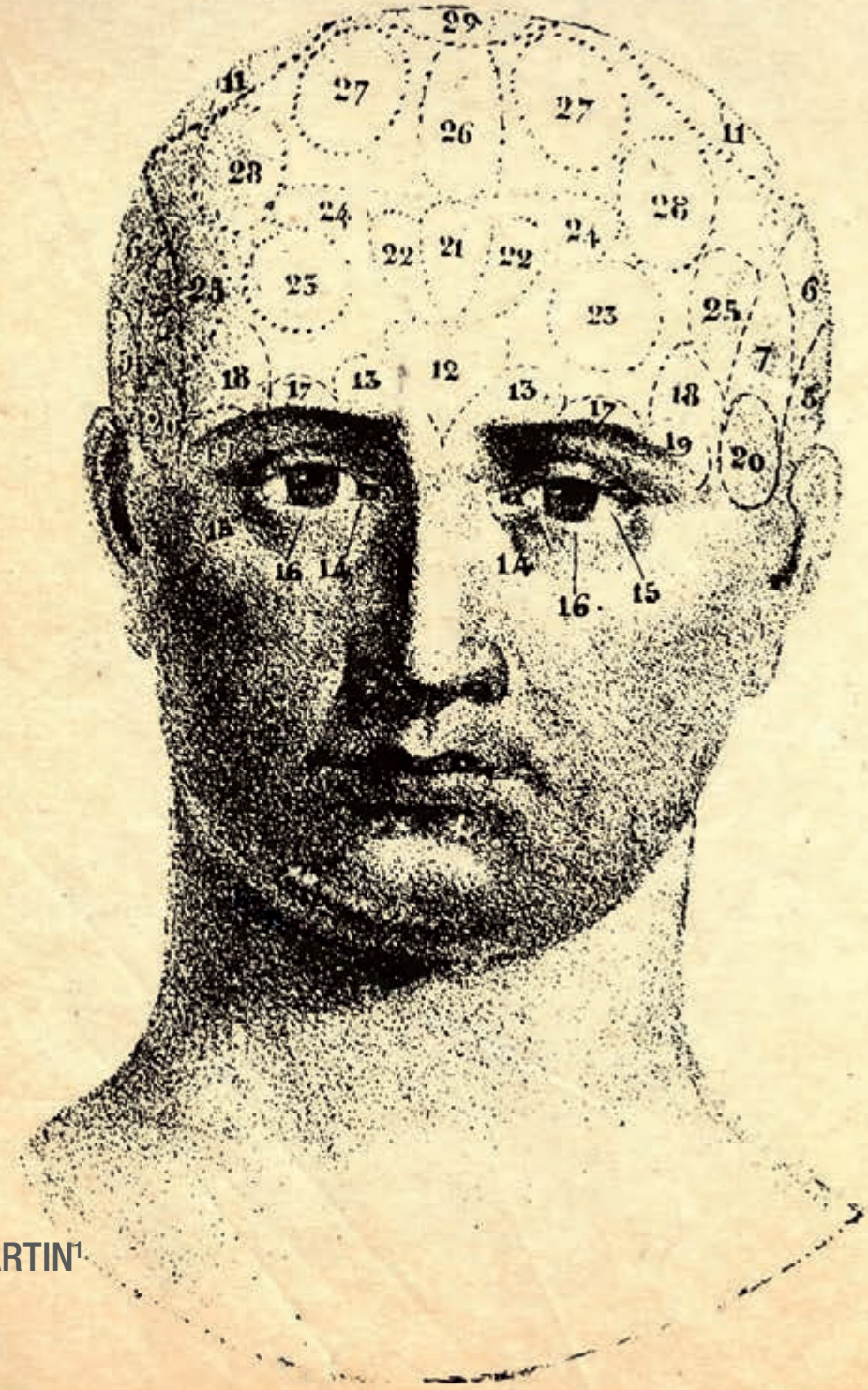
62 Guthrie, Rachlinski & Wistrich, *supra* note 3 at 827.

63 *Michigan Dept. of Transp. v. Haggerty Corridor Partners Ltd. Partnership*, 700 N.W.2d 380, 400 (Mich. 2005) (Kelly, J., concurring).

renders evidence of subsequent market performance highly prejudicial. Jurors are too apt to conclude, consciously or subconsciously, that if the defendant did not actually achieve monopoly power that such failure was inevitable and the defendant never enjoyed a dangerous probability of monopolizing the market. Given the power of hindsight bias and the minimal probative value of post-conduct market power, courts can reasonably conclude that the prejudicial effect of such evidence outweighs its probative value and therefore the evidence should not be admitted.

Preventing jurors from hearing evidence that invites hindsight bias is a practical solution for antitrust trials. But most antitrust claims do not make it to juries, in part, because federal judges grant summary judgment as a result of hindsight bias. Judges need to appreciate that their exposure to outcome information subconsciously affects their ability to process information. Unfortunately, because people generally believe that they are unaffected by hindsight bias, it may be hard to convince judges that they are susceptible to hindsight bias and should give the case to a clean-slate jury. This counsels in favor of educating judges about the hindsight bias because even though education cannot prevent an individual from experiencing hindsight bias in a specific case, it may help judges recognize the larger problem and rely more on juries that have not heard the information that invites hindsight bias.

BEHAVIORAL ECONOMICS: ANTITRUST IMPLICATIONS



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"What we've got here is failure to communicate"

Cool Hand Luke (1967).

I. INTRODUCTION

Antitrust policy deals mostly with imperfectly competitive markets. Even when firms in such markets behave in ways consistent with antitrust laws, market performance will be less than ideal. But antitrust laws do not compel competition.[2] Courts are directed to consider evidence about "actual market reality" to evaluate whether firm conduct conflicts with antitrust rules.

Evidence rarely speaks for itself, however; it must be interpreted. Landmark Supreme Court antitrust decisions can be read as interpreting evidence about the reality of market competition using an implicit model akin to the classroom model of perfect competition. To the extent that this is the case, it reflects misunderstandings about both the place of the model of perfect competition within economic theory and empirical findings about departures of real-world markets from the perfectly competitive standard.

In Section II, I review the development of the model of perfect competition. In Section III, I discuss evidence on the behavior of economic agents and the implications of that evidence for firm conduct and market performance. In Section IV, I turn to the economic logic applied in two precedent-setting Supreme Court antitrust decisions. Section V concludes.

II. RATIONALITY AS AN ELEMENT OF COMPETITION: ECONOMICS

When George J. Stigler wrote that "Competition may be the spice of life, but in economics it has been more nearly the main dish,"[3] he had in mind Adam Smith's description of market processes. There, it is rivalrous conduct that drives the market to its "natural price." If there is excess demand, buyers will offer to pay more ("a competition will … begin among them"); if there is excess supply, sellers will accept to be paid less. The natural price is the lowest price that dealers will accept if they are to supply the good "for a considerable time." Entry conditions make an appearance: a dealer will not long accept a price below the natural price "where there is perfect liberty, or where he may change his trade as often as he pleases."[4]

For Smith and the classical economists who followed in his wake, the competition that determined the equilibrium allocation of resources was "rational" in the sense that it required economic agents to independently maximize individual payoffs — profit for firms, satisfaction for consumers.[5] It also required that (Stigler, 1957, p. 2) "economic units … possess tolerable knowledge of the market opportunities."[6]

In the hands of Frank H. Knight,[7] this "competitive process" model flowered into the classroom model of perfect competition: many small buyers and sellers, all informed about all aspects of the market (and able to process that information), free-and-easy entry into and exit out of markets for homogeneous goods. In equilibrium, buyers and sellers individually maximize their own payoff functions. The rate of return on investment is the same in all markets, and resources are optimally allocated across markets.

It is an implication of these assumptions that buyers and sellers take the equilibrium price as given, provided they are infinitesimally small relative to the size of the market. An alternative approach — common in introductory classes — is to give up full rationality and require sellers to be "so small they ignore the impact of their output decisions on market price." But if a seller has complete and perfect information, it will be aware that it faces a downward-sloping residual demand curve, no matter how small its market share. If such a seller individually maximizes its own profit, it will act on that knowledge.[8]

2 *U.S. v. U.S. Steel*, 251 U.S. 417 (1920) at 451.

3 George J. Stigler (1968), "Competition," in David L. Sills, editor *International Encyclopedia of the Social Sciences*, Volume 3, The Macmillan Company & The Free Press, p. 181.

4 Adam Smith (1937 [1776]), *An Inquiry Into the Nature and Causes of the Wealth of Nations*, Edwin Cannan, editor. New York: The Modern Library, Book I, Chapter VII.

5 Henry L. Moore (1906), "Paradoxes of Competition," *Quarterly Journal of Economics* 20, p. 213.

6 George J. Stigler (1957), "Perfect Competition, Historically Contemplated," *Journal of Political Economy* 65, p. 2.

7 Frank H. Knight (1921), *Risk, Uncertainty, and Profit*, Boston: Houghton Mifflin.

8 Jan Horst Keppler & Jérôme Lallement (2006), "The Origins of the U-shaped Average Cost Curve," *History of Political Economy* 38, p. 737, fn. 1. That is, a bounded-rationality fudge is part of the standard undergraduate exposition of the model of perfect competition.

In just such a model, Cournot observed that equilibrium price approaches marginal cost asymptotically from above as the number of firms increases.[9] He *defined* perfect competition by the condition that firms take price as given. This end run around Knight's assumptions is common practice.[10]

Read with modern eyes, the market adjustment process leads to a static equilibrium — an outcome that persists unless there is some exogenous shock to underlying conditions, some change in demand or in resource endowments.

As Knight emphasized, perfect competition equilibrium in this static sense is the antithesis of the Smithian competitive process.[11] There is no rivalry, indeed no personal interaction, in perfectly competitive equilibrium. Buyers and sellers make decisions based on equilibrium prices in all markets. Since transactions are intermediated by prices, buyers and sellers need to know equilibrium prices. That is all they need to know, an economy of information processing that is a merit of the competitive equilibrium approach.[12]

A quite different, dynamic, notion of competition also appears in *The Wealth of Nations*.[13] Here "the division of labor is limited by the extent of the market" is central to market processes: expanding markets permit subdivision of tasks and firms, leading to endogenous increases in productivity in pursuit of economic profit while permitting firms to lower prices, so further expanding markets in a virtuous cycle of endogenous growth. Limited knowledge is an inherent aspect of this activity:[14] "The essential feature of such activities is that they are problem-solving, which means that the result can never be fully predicted in advance." There is no static equilibrium; the allocation of resources across markets never settles down. Some argue that it was this dynamic model that captured the classical economic vision of "competition," not the resource allocation mechanism that developed into the model of perfect competition.[15]

The complete-contingency-market extension of the static competitive equilibrium model introduces "the concept of a state of the world, which is a description of the world so precise that it completely defines all initial holdings of goods and all technological possibilities. Uncertainty is not knowing which state will in fact hold."[16] With complete competitive markets for all goods in all possible states of the world, the strong welfare results associated with the equilibrium of the basic resource-allocation view of competition hold. In particular, the equilibrium is Pareto optimal: no economic agent can be made better off without making at least one other economic agent worse off.

There are an infinite number of Pareto-optimal outcomes. The Pareto outcome that holds in equilibrium is determined by the initial distribution of income. There is no presumption that the equilibrium outcome associated with a particular initial distribution of income is socially optimal.[17]

Economists have recognized that the assumptions required for the results of complete competitive contingency markets to hold are not met in practice. For this reason, the general equilibrium model of universal perfect competition serves as an ideal standard.[18] It is not intended to describe outcomes in real markets.

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9 Augustin Cournot (1838 [1897]), *Researches into the Mathematical Principles of the Theory of Wealth*, Original Paris: L. Hachette, 1838. English translation by Nathaniel T. Bacon. New York: The Macmillan Company, reprinted 1927 by The Macmillan Company, New York with notes by Irving Fisher; reprinted 1960, 1964, 1971 by Augustus M. Kelley, New York.

10 See, for example, Joan Robinson (1934), "What is Perfect Competition?," *Quarterly Journal of Economics* 49:104-120.

11 Frank H. Knight (1946), "Immutable Law in Economics: its Reality and Limitations," *American Economic Review* 36:93-111.

12 See, for example Leonard E. Read (1958), *I Pencil: My Family Tree as told to Leonard E. Read*, Irvington-on-Hudson, New York: Foundation for Economic Education, Inc. (http://oll.libertyfund.org/titles/112).

13 *Op. cit.*, Book I, Chapter III.

14 Knight (1946), *op. cit.*, p. 105.

15 Allyn A. Young (1928), "Increasing Returns and Economic Progress," *Economic Journal* 38: 527-542; Hla Myint. (1948), "The Classical Theory of Free Competition (A Reinterpretation)," in *Theories of Welfare Economics*. New York: Sentry Press, Chapter IV, pp. 53-69; G. B. Richardson (1975), "Adam Smith on Competition and Increasing Returns," in Andrew S. Skinner & Thomas Wilson, editors *Essays on Adam Smith*. Oxford: Clarendon Press, pp. 350-360. Joseph A. Schumpeter conceived of competition in this way ((1943) *Capitalism, Socialism and Democracy*, London: Allen & Unwin.

16 Kenneth J. Arrow (1974), "General Economic Equilibrium: Purpose, Analytic Techniques, Collective Choice," *American Economic Review* 64:253-272.

17 Under the assumptions of the model, an allocation of resources in which one individual holds all resources is Pareto optimal.

18 *Ibid*, p. 268.

In what ways do actual markets fall short of the assumptions of the general equilibrium model? In real world markets, information is not complete and perfect. Nor is the limited information available uniformly distributed in the market. Some economic agents are better informed than others, and if they maximize their own payoffs, they will take advantage of their superior information. Other economic agents, recognizing their informational disadvantage, will engage in defensive strategies.[19]

Some states of the world are not foreseen — sometimes something happens that was not conceived of as being possible. Complete contingency markets do not exist. Where there are markets that serve some of the functions of contingency markets, for example, insurance markets, they will be plagued by the asymmetric distribution of information referred to above,[20] and they will not be supplied by many small firms, as required by the model of perfect competition.

The assumption of free-and-easy entry and exit — present *in embryo*, as we have seen, in *The Wealth of Nations* — is central to the nature of equilibrium in the competitive model. Entry and exit ensure identical equilibrium rates of return to investment in all markets, the identifying characteristic of general equilibrium. In the corresponding partial equilibrium of any one market, price equals marginal cost and the minimum value of average cost.[21]

For entry to be free and easy requires that entry involve no sunk investment, so that exit involves no loss of sunk entry costs. Entry, however, normally involves some sunk investment. Investment in tangible industry-specific assets, which could be sold only at a discount, if at all, in the event of exit, will be partially or entirely sunk. Investment in intangible assets — investment in information about market demand and production technology — will be largely sunk.

The assumption of the perfect competition model is that entrants, like incumbents, have complete and perfect information about all aspects of the market. This is decidedly unlike real-world entry. Much entry appears be followed by a learning period during which the entrant acquires information about the market, information that it is assumed to already have in the perfect competition model. Often, what is learned is that entry is not profitable, and most entry is followed by exit. In real-world markets, entry is not an automatic equilibrating force that drives price to the minimum value of average cost.

In industries where entry requires substantial sunk investment, relative to the size of the market, the number of firms will be small, firms will not take price as given, and oligopolistic interactions will play a role in market outcomes. In intermediate-goods markets, sunk entry costs on the demand side of a market will give it an oligopsonistic aspect.

Importantly, general equilibrium theory speaks to the properties of equilibrium. There is no theory to indicate how the out-of-equilibrium behavior of economic agents might drive the market to equilibrium. There is a story, associated with the name of Walras, of notional price adjustments that take place in virtual time and lead to general competitive equilibrium. This story does not describe market processes.

The powerful welfare results of the competitive general equilibrium model hold if all goods are private, that is, if they benefit the user and only the user. This is not a necessary characteristic of real-world goods, for a couple of reasons. First, some goods are public — national defense, for example, or a well-functioning legal system. And second, in the presence of externalities, consumption of a private good may harm or benefit others. Coase shows that in the absence of transaction costs, bargaining over external effects will lead to Pareto-efficient outcomes.[22] But transaction costs are never completely absent.

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19 This has important implications for the nature of firms — nonmarket institutions for organizing economic activity — and for market outcomes. See Kenneth J. Arrow (1974), "Rationality: Individual and Social," pp. 14-29 in *The Limits of Organization*, New York: W.W. Norton & Co., Inc.; Joseph E. Stiglitz (1989), "Imperfect Information in the Product Market," in Richard Schmalensee & Robert D. Willig, editors *Handbook of Industrial Organization*, Volume I. Amsterdam: Elsevier Science Publishers, B.V., pp. 769-847.

20 Arrow cites health insurance as an example of such a market ((1974). "Limited Knowledge and Economic Analysis," *American Economic Review* 64:1-10).

21 As is customary, cost is defined to include a normal rate of return on investment — Adam Smith's "natural rate of profit."

22 R. H. Coase (1960), "The Problem of Social Cost," *Journal of Law and Economics* 3:1-44.

III. BOUNDED RATIONALITY

"Rationality," then, entered economics simply as "maximizing." The full-blown "rational economic man" model of competitive market equilibrium adds a host of ancillary assumptions to the idea of maximizing behavior.[23] For the equilibrium characteristics of the rational economic man model to be a useful guide for the performance of real-world markets, those ancillary assumptions should be at least approximately satisfied. Economic agents should seek mainly to maximize their own payoff functions. They should have a high degree of information about the markets in which they operate, and the ability to analyze that information.

Not only does it appear that these assumptions cannot be assumed to automatically hold in real-world markets, but the findings of behavioral economics suggest that decision-makers depart from these assumptions in systematic ways.[24]

With unbounded analytical ability, an individual's selection in a choice situation would be independent of the way the choice is presented. But evidence shows that choices vary systematically with the way options are framed.[25] Rather than fully working out the best option, decision-makers employ rules-of-thumb — heuristics — that economize on decision-making efforts but may lead to choices that fall short of fully-rational outcomes.

In his model of entry deterrence, Reinhard Selten outlines a three-level hierarchy of decision-making.[26] In this framework, routine decisions are taken in a habitual way, without thinking. Decisions taken at the level of imagination invoke routine experience to anticipate the relation between actions and results. Decisions taken at the level of reasoning are made after complete analysis of a model of the decision. Decisions at the level of routine and imagination, therefore, involve rules of thumb.

In Selten's chain store model of entry deterrence, deterrence does not occur in fully rational equilibrium. Selten calls this result a paradox because he does not find it convincing as a guide to market outcomes. A boundedly rational potential entrant, making decisions at the level of imagination, might see an incumbent's threat to respond aggressively to its entry as plausible. The optimal response of a fully rational incumbent against a boundedly rational entrant can differ from the optimal response against a fully rational entrant.[27] Aware of the bounded rationality of potential entrants, it might be rational for an incumbent to respond aggressively to entry, if by so doing it would create a reputation that would deter future entry or entry into other markets.

It follows that in a world of boundedly rational economic agents, predatory conduct cannot be ruled out at the level of theory. Nor is there any shortage of real-world examples of strategic exclusionary conduct.[28]

The literature on loss-aversion suggests that decision-makers seek to maximize improvements from, or minimize losses from, an initial position, not to maximize net worth. Losses are disliked more than gains of the same magnitude are valued.

Nor are objective functions limited to an agent's own payoff. In the laboratory, the ultimatum game involves two players. One (the proposer) offers the other (the responder) a portion of a sum of money. If the responder accepts the proposal, each gets the proposed share. If the responder rejects the proposal, neither receives anything. Fully rational conduct would have the proposer offer the smallest possible finite amount which the responder would accept. In the event, proposers offer somewhat less than 50-50 divisions, and these proposals are accepted. Such outcomes may reflect a concern for fairness on the part of the proposer. They may also mean that the proposer anticipates a concern for fairness on the part of the responder, and so makes an offer not expected to lead to rejection.

23 Herbert A. Simon (1986), "Rationality in Psychology and Economics," *Journal of Business* 59:S209-S224.

24 Sendhil Mullainathan & Richard H. Thaler (2015), "Behavioral Economics," pp. 437-442 in Neil J. Smelser & Paul B. Baltes, editors *The International Encyclopedia of the Social & Behavioral Sciences*, 2nd edition, Volume 2.

25 Amos Tversky & Daniel Kahneman (1986), "Rational Choice and the Framing of Decisions," *Journal of Business* 59:S251-S278.

26 Reinhard Selten (1978), "The Chain Store Paradox," *Theory and Decision* 9:127-159.

27 Edward J. Zajac & Max H. Bazerman (1991), "Blind Spots in Industry and Competitor Analysis: Implications of Interfirm (Mis)Perceptions for Strategic Decisions," *Academy of Management Review* 16:37-56.

28 For a review, see Stephen Martin (2015), "Areeda-Turner and the Treatment of Exclusionary Pricing under U.S. Antitrust and EU Competition Policy," *Review of Industrial Organization* 46:229-252.

Elinor Ostrom presents much case study evidence of the endogenous emergence of institutions, around the world, that aim to manage common-property resources.[29] This is real-world evidence of individual conduct that reflects a concern for group objectives. The empirical regularities of institutional design that she distills from this evidence have much in common with observations in the economics literature about the organization of cartels.[30] Findings in the economics literature make clear that while cartel success is not inevitable, neither is cartel breakdown.[31]

IV. BOUNDED RATIONALITY AND THE ECONOMICS OF ANTITRUST

The U.S. Supreme Court affirms the principle that antitrust policy should be based on "actual market realities."[32] In practice, it gives priority to the assumptions made by the model of perfect competition.

In *Matsushita*,[33] the economic theory of antitrust injury alleged a collusive, predatory scheme by Japanese television manufacturers seeking control of the U.S. market. The Supreme Court referred to "a consensus among commentators that predatory pricing schemes are rarely tried, and even more rarely successful."[34] It was not convinced of the possibility of collusion over long periods of time,[35] and seemed convinced that rapid entry would make predation, if successful, unprofitable. All of these positions might be plausible for markets that can be modelled as if they are perfectly competitive. Such markets are unlikely to attract antitrust attention.

There is, as noted above, much evidence of exclusionary strategic behavior in real-world markets. Nor is real-world entry as rapid as it is assumed to be in the model of perfect competition. Profitable collusive predation cannot be ruled out on *a priori* grounds in markets supplied by boundedly rational firms.

A District Court trial would have produced evidence of whether "the reality of competition in the market place" was consistent with such exclusionary conduct in *Matsushita*. The Supreme Court decided against such a trial, because the claim of antitrust injury through collusive predation "simply [made] no economic sense." That would be the case if the imperfectly competitive market in question were supplied by unboundedly rational firms. Whether such a scheme made sense in the market as it was, we do not know.

In *Brooke Group*,[36] the economic argument was that the defendant, Brown & Williamson, engaged in predatory pricing of generic cigarettes to shore up the profitability of its branded products, which had lost market share to low-price generic cigarettes marketed by Liggett & Myers.

The U.S. cigarette market is a highly concentrated oligopoly, with a history of collusive antitrust violations.[37] There was evidence that Brown & Williamson had set prices below unit costs for 18 months — that is, that its conduct had satisfied the Areeda-Turner standard for predatory pricing.

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29 Elinor Ostrom (2001), "Reformulating the Commons," in Joanna Burger, Elinor Ostrom, Richard B. Noorgaard, David Policansky & Bernard D. Goldstein, editors. *Protecting the Commons: A Framework for Resource Management in the Americas*. Washington, D.C. and elsewhere: Island Press, pp. 17-41.

30 Stephen Martin (2018), "Behavioral Antitrust," in Victor J. Tremblay, Elizabeth Schroeder & Carol Horton Tremblay, editors: *Handbook of Behavioral Industrial Organization*. Edward Elgar, pp. 404-454.

31 Margaret C. Levenstein & Valarie Y. Suslow (2006), "What Determines Cartel Success?," *Journal of Economic Literature* 44:43-95.

32 *Eastman Kodak*, 504 U.S. 451 (1992) at 46. See also *Brooke Group*, 509 U.S. 209 (1993) at 229: "However unlikely that possibility may be as a general matter, when the realities of the market and the record facts indicate that [a predatory pricing scheme] has occurred and was likely to have succeeded, theory will not stand in the way of liability"; *GTE Sylvania*, (433 U.S. 36 (1977) at 58-59): "departure from the rule-of-reason standard must be based upon demonstrable economic effect rather than … upon formalistic line drawing." See earlier *Maple Flooring*, 28 U. S. 563 (1925) at 579, *White Motor*, 372 U.S. 253 (1963) at 263, *Monsanto v. Spray-Rite*, 465 U.S. 752 (1984) at 762, and *Business Electronics v. Sharp*, 485 U.S. 717 (1988) at 726, and later *American Needle*, 560 U. S. 183 (2010) at 191.

33 *Matsushita v. Zenith*, 475 U.S. 574 (1986).

34 475 U.S. 575 at 589.

35 For a sample of 81 international cartels that violated U.S. antitrust or EU competition law, Margaret C. Levenstein & Valarie Y. Suslow ((2011), "Breaking Up Is Hard To Do," *Journal of Law and Economics*. 54:455-492) report an average duration of 8.1 years, with two cartels lasting less than 1 year and one lasting 29 years (their Figure 2). Of necessity, their sample does not speak to the duration of undetected cartels.

36 *Brooke Group v. Brown & Williamson*, 509 U.S. 209 (1993).

37 *American Tobacco Co. et al. v. U.S.*, 328 U.S. 781 (1946).

The Supreme Court, however, regarded tacit collusion among the oligopoly suppliers of the cigarette market as essential to produce supracompetitive prices "in the generic segment,"[38] so allowing Brown & Williamson to recoup the profits lost during 18 months of selling below cost. Viewing such tacit collusion as implausible, it affirmed a lower-court decision setting aside a jury verdict in favor of Liggett & Myers.

Viewed through the lens of the model of perfect competition, perhaps tacit collusion in this market could be expected to be ephemeral. Yet, in a highly-concentrated market with a history of collusive behavior, it is difficult to reconcile such a position with the reality of competition in the market place. Even if the industry could not coordinate on supracompetitive prices in generics, pricing below cost for 18 months is consistent with the economic theory put forward by Liggett & Myers, which was that recoupment would take place in the branded segment of the market.

V. CONCLUSION

The economics profession, apparently, has failed to communicate the role and limitations of the perfect competition model. In that model, it is an assumption that firms seek to maximize only individual payoffs. It is an assumption that they have complete and perfect information about the market and understand fully the implications of that information. It is an assumption that entry and exit act as more-or-less automatic balancing forces that limit profits to a normal rate of return on investment. The model of perfect competition supports an equilibrium that is a standard of ideal market performance. It is not a description of the way markets work, not is it intended to be.

In markets as they are, firms sometimes recognize a collective as well as an individual interest; tacit or overt collusion may endure. Information is often incomplete and unevenly distributed; firms have limited analytical ability. It may be plausible for some firms to engage in strategic exclusionary behavior, and for boundedly rational target firms to think such conduct is plausible. Entry often requires sunk investments, and frequently turns out not to be successful, even if incumbents are making healthy economic profits.

This is not to say that collusion is always effective, that aggressive dominant-firm behavior always aims to exclude equally-efficient rivals, or that high incumbent profitability is never followed by successful entry. It is to urge that antitrust authorities should not routinely interpret evidence about the reality of competition in imperfectly competitive markets as if the assumptions of the perfect competition model were the norm, rather than the exception.

38 509 U.S. 209 (1993) at 232-233.

A LOOK AT BEHAVIORAL ANTITRUST FROM 2018

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I. INTRODUCTION

Behavioral antitrust is an approach to antitrust analysis that marries the fields of behavioral law and economics and antitrust law. Its expression as an independent mode of analysis dates to early work by professors including Avishalom Tor (2002) and Maurice Stucke (2005), and in the ensuing years many others, including this author, have commented on behavioral antitrust. To a thinker inclined to disparage behavioral antitrust, it is one of a parade of challenges to the dominant mode of analysis, frequently described as Chicago School antitrust, and like other of those challenges may disappear with the retirement of its leading scholarly or political proponent. To a thinker, like this author, inclined to find behavioral antitrust useful, the approach is a sharpening of a set of tools grown dull over fifty years of single-minded application.

A review of the arguments surrounding behavioral antitrust teaches (1) the case for considering behavioral economics in antitrust analysis is as strong as it ever was; (2) the arguments that behavioral economics does nothing to inform antitrust analysis are overstated; and (3) the two conversations seem to be ships passing in the night, with neither argument really engaging the other on its own terms.

II. BEHAVIORAL LAW AND ECONOMICS

A. The Social Science

Behavioral economics, a field that has spawned at least two Nobel Prizes in recent decades (Daniel Kahneman, 2002, and Richard Thaler, 2017 – the 2001 Nobel for "information asymmetry" is not about behavioralism, but there are analogs), challenges assumptions about human behavior that are the basis for so-called "rational choice economics." Studies of human behavior were found to disprove assumptions including that humans are rational utility maximizers, humans have consistent preferences, humans have the will-power needed to realize their preferences, humans have the intelligence needed to realize their preferences – and so on.

None of this was surprising to any honest observer of human conduct – examples of hyperbolic discounting (e.g. failing to save for retirement); the endowment effect (e.g. overpricing items when reselling on Craigslist, or low-balling when buying on Craigslist); framing (e.g. paying more than you planned because you first saw the really expensive option); and loss aversion (e.g. overly safe investing and missing out on capital growth), to name a few, are well understood and common fodder for both folk wisdom and popular press accounts. What behavioral economics proved was that there was sufficient consistency in deviations from rational choice theories to model human behavior based on those deviations, a point most compellingly made in the popular press book by Dan Ariely, *Predictably Irrational*.[2]

An important lesson from Ariely's (and others') demonstrations that supposedly irrational behavior was predictable is that the pejorative term "irrational," while perhaps descriptive rather than normative to an economist, is inappropriately applied when evaluating policy choices. Few would recommend legal rules designed to accommodate irrational behavior – for example, when evaluating "deception," common law and the Federal Trade Commission rely on consumers' "acting reasonably under the circumstances."[3] Many of the critiques of the use of behavioral economics in legal and policy analysis build on too-cute turns on the idea of irrational behavior, sporting titles like "Misbehavioral Economics," and "Law and Economics' Perfect Rationality . . . Behavioral Law and Economics' Equal Incompetence."[4] The importing of behavioral economics into law necessitates an understanding that behavioral economics insights improve the modeling of behavior, rather than highlight quirks.

B. Law and . . .

The foundational text for behavioral law and economics may be the 1998 article by Professors Jolls, Sunstein & Thaler, *A Behavioral Approach to Law and Economics*,[5] which identified a number of likely applications of behavioral economics to legal rules built on rational choice economic theory. Their applications included contracting behavior, a broad topic that covers employment relationships, lending behavior, commercial activity, and dispute resolution. Behaviorally informed law and economics might show that the endowment effect, for example, undermines the Coaseian result that initial endowments are irrelevant to reaching efficient outcomes, rendering correct allocations of endowments more rather than less

2 Dan Ariely, Predictably Irrational (2010).

3 Federal Trade Commission, Policy Statement on Deception 2-4 (October 1983), available at https://www.ftc.gov/system/files/documents/public_statements/410531/831014deceptionstmt.pdf.

4 Josh Wright & Judd Stone, *Misbehavioral Economics: The Case Against Behavioral Antitrust*, 33 Cardozo L. Rev. 1517 (2012); Gregory Mitchell, *Why Law and Economics' Perfect Rationality Should Not Be Traded for Behavioral Law and Economics' Equal Incompetence*, 91 Georgetown L.J. 67 (2002).

5 50 Stan. L. Rev. 1471 (1998).

important – a starting point for resource allocation decisions. Understanding individuals' tendencies to engage in hyperbolic discounting gives some explanation for laws against usury, which a traditional economics account treats as an efficient arms-length transaction. Inertia leading to failing to select away from defaults suggests a policymaker might improve outcomes through "choice architecture."

A Behavioral Approach reaches far broader, discussing the First Amendment's "prior restraints doctrine" and environmental regulation. In the ensuing two decades, the paper has spawned an enormous academic literature covering topics including criminal law, corporate governance, labor law, health law, election law, securities law – and many other fields and sub-fields, including antitrust.

III. BEHAVIORAL ANTITRUST

A. The Subject

Antitrust is the most natural application of behavioral law and economics because the field is the most completely dependent on economic analysis of all of the major fields of law. (This is a deliberately aggressive claim, made with a recognition of the overweening importance of economics in corporate and securities law, contract law, administrative law, and utilities regulation, to name a few.) Innovations that improve economic analysis should work their way into antitrust. Antitrust is also a natural application of behavioral law and economics because of the process by which antitrust law develops, moving by common law rather than by statute or regulation and frequently – approaching always, at the appellate and Supreme Court levels – enjoying the benefit of expert insights by amici from the federal and state enforcers, the academy, and sophisticated think-tanks representing all political views. Antitrust law is not subject to politically motivated rule-making and has generally avoided populist legislation and baldly ideological adjudication.[6]

Behavioral antitrust has been much remarked in academic commentary since the initial article by Avishalom Tor in 2002, with a Westlaw search for the phrase "behavioral antitrust" turning up 112 law review articles, and approximately half again on a search for the phrase "behavioral economics" in close proximity to the word "antitrust."[7] Its formal adoption in the courts has been much slower – a search for the phrase "behavioral antitrust" turns up no judicial opinions – the same for variations including "behavioral economics" in close proximity to "antitrust." Based partly on such database searches, Judge Ginsburg, writing in the CPI print journal, has gone so far as to say that behavioral antitrust does not offer any meaningful assistance to judges in antitrust cases.[8]

Such word-searching seems likely to understate behavioral antitrust's usefulness in light of the nature of behavioral economics and behavioral antitrust. As an academic discipline, behavioral economics may be separable from "other" economics, but in application, when lawyers, judges, or policy-makers apply economics to antitrust analysis, they are fundamentally trying to determine market effects from conduct or from a merger. Whether those market effects are driven by market actors' conduct that is consistent with or inconsistent with rational choice theory is not part of the question. It would be silly if it were: imagine an observed price effect from conduct, but an argument that the effect was brought about by consumers' cognitively biased behavior, and a judicial or prosecutorial determination that the effect must be ignored because its existence violated the predictions of rational choice theory.[9]

As one author pointed out:

> Antitrust analysis has long accepted that particular firms or individuals may act in idiosyncratic ways. For example, "maverick" firms may be particularly disruptive. Behavioral economics, however, may provide a mechanism for explaining why firms or individuals behave in the way they do (e.g., why apparently irrational business plans are implemented), but, again, the fact of such behavior has long been recognized.[10]

6 Exceptions exist. See, e.g. Max Huffman, *A Retrospective on Twenty-Five Years of the Foreign Trade Antitrust Improvements Act*, 44 Houston L. Rev. 285 (2007) (criticizing legislation supplanting a pre-existing "modestly successful common-law scheme").

7 Searches conducted for phrase "behavioral antitrust" and ("behavioral economics" /p antitrust) in Law Reviews and Journals database, next.westlaw.com (conducted Dec. 16, 2018).

8 Douglas Ginsburg & Derek Moore, *The Future of Behavioral Economics in Antitrust Jurisprudence*, 6 Comp. Pol'y Int'l 89 (2010).

9 This is in fact a fair analysis of the dissent by Justice Scalia in *Eastman Kodak Corp. v. Image Technical Services*.

10 Allan Shampine, *The Role of Behavioral Economics in Antitrust Analysis*, 27-Spring Antitrust 65 (2013).

Apart from indulging the tendency to characterize conduct that deviates from unrealistic assumptions as "idiosyncratic" or "irrational," this is a well-stated explanation for why behavioral economics operates under the radar in antitrust analysis.

Probably the best-known (but insufficiently recognized) example of behavioral antitrust arose well before the birth of behavioral law and economics as an academic discipline. The Supreme Court's 1992 opinion in *Eastman Kodak Corp. v. Image Technical Services*[11] has been much remarked as the leading example of the post-Chicago school of antitrust analysis, the Court's strongest recent pronouncement of the importance of reaching antitrust decisions in light of marketplace realities. I have argued that the consumer conduct that led to price effects, despite what the dissent contended was opportunity for the market to discipline Kodak's conduct, can best be explained by reference to lessons from behavioral economics. Well-remarked biases including hyperbolic discounting, anchoring, optimism, and ownership bias all may be in play in explaining why the market does not in fact discipline meaningful exercises of monopoly position.[12] Other authors have identified examples including *Microsoft Corp.*; the "Overlap Group" case in the Third Circuit; and FTC decisions or opinions by individual commissioners from recent years.[13]

B. Specific Applications

Entry: the earliest article on behavioral antitrust exploded "the fable of entry," arguing that cognitive biases affecting decision-makers within firms rendered successful entry less, rather than more, likely – with the result that monopolizing conduct was more likely to be profitable than rational choice theory would predict.[14] The prediction that monopolizing conduct, such as predation strategies, are unlikely to succeed may be the best-known and most successful Chicago-School argument for noninterventionist policy, driving the results in cases like *Matsushita*, *Trinko*, and *Weyerhauser*. Professor Tor has argued convincingly that all entry is not equal, and much entry is unsuccessful; this is not the product of random failures but of predictable cognitive biases; and if the law were to account for this it would be more open to evidence of recoupment that historically is treated as unlikely.

Cartelization: a common attack on traditional beliefs underlying antitrust results speaks to the understanding of cartel behavior.[15] The traditional treatment of cartels holds that they are fragile and unlikely to succeed in displacing competition in the long run.[16] This belief, best stated by Nobel Laureate George Stigler, underlies holdings like that of the Supreme Court in *Brooke Group* that a coordinated recoupment strategy is so unlikely to succeed because competitors will cheat on the coordinated price increase.[17] Behavioral economics may upset this understanding, demonstrating corporate decisionmaker tendencies (1) to support the group rather than to go it alone; and (2) to accept stable but lesser profits instead of maximizing profits by cheating on the cartel.

Rule of reason for vertical price agreements: in 2007 in *Leegin*, the Supreme Court reversed the 96-year-old *per se* rule and applied the rule of reason, a rule consistent with Chicago School arguments that vertical price fixing is unlikely to present harm to consumers that is not overcome by economic benefits.[18] A confounding problem post-*Leegin* has been how to apply the rule of reason to conduct when (1) the primary marker of net harm is the price effect of conduct; and (2) the very purpose of a vertical price fix is to increase price. Tor & Rinner argued that evidence from behavioral economics suggested overuse of resale price maintenance schemes with both anticompetitive as well as inefficient (but neutral with regard to competition) results, favoring a rule of reason treatment that more critically examined the practice. Tor & Rinner also spell out behavioralist insights that better explain inefficient uses of resale price maintenance.[19]

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11 504 U.S. 451 (1992).

12 See Max Huffman, *Marrying Neo-Chicago with Behavioral Antitrust*, 78 Antitrust L.J. 105 (2012).

13 *Microsoft Corp. v. United States*, 253 F.3d 34 (D.C. Cir. 2001); *United States v. Brown Univ.,* 5 F.3d 658 (3d Cir. 1993); Statement of Chairman Timothy J. Muris, *Genzyme Corp./Novazyme Pharm., Inc.*, FTC File No. 021-0026 (Jan. 13. 2004); Concurring Statement of Commissioner J. Thomas Rosch at 1, *FTC v. Ovation Pharm., Inc.*, FTC File No. 0810156 (Dec. 16, 2008).

14 Avishalom Tor, *The Fable of Entry: Bounded Rationality, Market Discipline, and Legal Policy*, 101 U. Mich. L. Rev. 482 (2002).

15 Avishalom Tor, *Understanding Behavioral Antitrust*, 92 Tex. L. Rev. 573 (2014).

16 George Stigler, *A Theory of Oligopoly*, 72 J. Pol. Econ. 44 (1964).

17 *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209 (1993).

18 *Leegin Creative Leather Prods. v. PSKS Unltd.*, 551 U.S. 877 (2007).

19 Avishalom Tor & William Rinner, *Behavioral Antitrust: A New Approach to the Rule of Reason after* Leegin, 2011 U. Ill. L. Rev. 805.

Behavioral exploitation: the most natural application of behavioral economics in antitrust targets the driving force of antitrust policy – the different sophistication of centralized, well-capitalized, repeat-player firms acting as producers and diffuse individual consumers frequently participating in the market too rarely, or too casually, to develop experience. I have termed the result "behavioral exploitation," a label that I think on revisiting it may be more normatively charged than is appropriate.[20] As a theory of harm, the argument goes this way. One side of the transaction – in most cases the seller side, although antitrust accommodates theories of monopsony power as well – develops a sophisticated data-driven understanding of drivers of consumer decisions. The profit-maximizing strategy is to use that data to enable it to raise prices and reduce costs without sacrificing market share to competitors. This can be achieved by targeting bases for consumer decisions that are different from price and quality, by targeting well-known cognitive biases. That this occurs in fact is firmly established in marketing literature that long predates the discussion of behavioral antitrust or behavioral law and economics generally.

Behavioral exploitation is likely to succeed in markets for durable goods, in which consumers engage rarely – maybe, in the case of a house purchase, once in their lives. Daniel Heidtke and I develop this explanation for what were retrospectively improvident (but were prospectively understandable) consumer decisions that led to the 2007 financial crisis. It is also likely to succeed in markets with substantial aftermarkets. *Kodak* did this by exploiting consumers' realistic inability to engage in life-cycle pricing for enterprise-scale photocopy machines. Other examples of behavioral exploitation as profitable strategies include sales of technology peripherals and airline baggage charges. Because the success of such a strategy will turn on its sophistication, monopoly power in data-rich markets is likely to be enhanced through behavioral exploitation. And because nothing about the strategy is deceptive, as the term is used in consumer protection law, it has not been attacked as a matter of common law or regulation governing individual consumer transactions.

IV. CRITIQUES AND RESPONSES

A. "Not Ready for Prime Time"

Professor Wright & Judd Stone wrote a strongly-worded rebuke of behavioral antitrust and a criticism of its proponents that has become the go-to reference for critics. In *Misbehavioral Economics: The Case Against Behavioral Antitrust*, Wright & Stone set up straw men and then ably knock them down again. First, they argue that proponents of behavioral antitrust uniformly favor greater intervention, a point several, including critics, have debunked. Second, they contend the enterprise does not offer "clear policy implications for the law." As I note below, I think in part the authors are simply talking about something different from what behavioral antitrust proponents are discussing. But, too, "clear policy implications" overstates what any social science can do for legal rules. Wright's and Stones' argument is captured by their pithy phrase, "not ready for prime time." While it is possible two Nobel Prizes in the field of behavioral economics would convince the authors otherwise, the more important point is that the use of behavioral economics in antitrust is best understood as using economics as evidence, not as a policy tool, and in the space of factual development, whether for adjudication or policy-making, any provable fact is "prime."

B. Paternalistic and Accepts "Irrational" Behavior

A number of critics have attacked behavioral law and economics generally for its paternalism and its preventing those infected with biases from learning how to act rationally. These arguments have more weight in some policy uses of behavioral economics than they do in the context of antitrust. At its most paternalistic, behavioral economics has been suggested as a means for "choice architecture," with an example from the Thaler and Sunstein book *Nudge* being the ordering of food in cafeteria lines: desserts first, people eat more sugar; vegetables first, people eat more vegetables.[21] I concede the failure of that particular application of behavioral economics, taken in light of the known tendencies of elected or appointed decision-makers to make grievous errors on topics like nutrition.

The paternalism critique becomes hollow when applied to behavioral antitrust. No decision-maker is tasked with achieving a market outcome that accommodates biased decision-making in antitrust. Rather, conduct that interferes with unfettered markets to negative effect is challenged, and behavioral economics can help to determine whether there is a harmful effect from the conduct. Anti-paternalism does not, in this context, have the effect of protecting us from short-sighted or improperly influenced government agents seeking to limit consumer choice. If anything, it has the impact of precluding oversight of private market interference that is provably causing harm. Anti-paternalism, as applied to behavioral antitrust, is merely a prescription ignoring information that informs whether and how to enforce the law.

20 Max Huffman, *Marrying Neo-Chicago with Behavioral Antitrust*, 78 Antitrust L.J. 105 (2012); Max Huffman & Daniel Heidtke, *Behavioral Exploitation Antitrust in Consumer Subprime Mortgage Lending*, 4 Wm. & Mary Pol'y Review 77 (2012).

21 Richard Thaler & Cass Sunstein, *Nudge* (2009).

A related critique speaks to the necessity of cognitively biased regulators and the effect that can be expected to have on enforcement.[22] In an area of first-order regulation, where government employees establish prices or dictate menus or determine building design, that critique has some force, though it remains imperfect. (Training and experience can overcome cognitive biases.) Antitrust is not an area of first-order regulation, and neither courts nor agencies dictate terms of doing business outside of remedies imposed through the adversarial process. Bias that exists is likely to be muted by that process and the interplay of the many actors involved. Even if it is not, there is no reason to believe that *failing to consider* biases possessed by market actors might somehow mitigate the effect of biases possessed by enforcers or courts.

C. Conflicting Biases

Several authors point out that biases seemingly conflict with one another and which bias is likely to overbear which may be difficult or impossible to predict. According to one paper: "The sheer number of cognitive biases upon which the discipline focuses confounds predictability, not least because their effect on behavior is multi-directional. Any policy prescription based on those biases will inevitably be incoherent and capricious."[23] These authors continue to list biases that are in counterpoise, "biases suggesting lack of substitutability" followed by "biases indicative of rapid substitution"; "biases suggesting that entry is more likely" and "biases suggest that less entry will occur" – and so on.

The conflicting biases argument is the most difficult to confront head-on, because it goes to the heart of the predictability of deviations from rational choice theory. Take the entry argument from the 2002 Tor paper: if the traditional rule is that recoupment is unlikely in the presence of entry, leading to a *de facto* higher burden to bring a predation case, upsetting that traditional rule necessitates a reliable showing of the insufficiency of entry. The Devlin & Jacobs argument, and others like it, follows Wright & Stone in conflating evidentiary facts with recommendations for broad changes to policy. Tor did not argue that recoupment should not be required as an element of a predation claim, but that recoupment was possible even in the presence of entry. The reason does not depend on what way it is that observed entry fails to check monopoly pricing, but only on the fact that the entry is not sufficient, in terms of both scale and sustainability. The same general response holds for other theory-based critiques of behavioral arguments.

V. SHIPS PASSING IN THE NIGHT

Critics and proponents sometimes seem to be having two different conversations that are as ships passing in the night in their failure to engage with one another. A proponent of behavioral antitrust may argue that a cognitive bias may support an observed price effect, strengthening a plaintiff's case for enforcement of the law. A critic may state that behavioral economics does not provide a unified theory and therefore antitrust law cannot depend upon it. Both statements, in their respective spheres of application, can be true. One author characterizes Professor Wright's critique of behavioral antitrust, "While mentioning individuals, he is improperly focused on the aggregate. His approach is one of an economist, not a litigator. But the difference between economics and litigation is critical to properly understand the value of behavioral economics."[24]

In a 2005 article, Professors Lopatka & Page outlined the different uses of economics in antitrust analysis, relying on the core difference between rule and fact.[25] They attributed the importance of economic expertise on factual questions to the decline of *per se* rules, a process that has accelerated in the past four decades, with most conduct formerly subject to *per se* rules now analyzed under the rule of reason.

Economics in antitrust operates on two distinct planes. One is the theoretical plane on which policy is made and lawmaking is conducted. This plane is subject to change with political and historical movements, but for the past 40 years has been largely occupied by theories of economic regulation and efficiency most commonly associated with the Chicago School. These tell us that antitrust law maximizes welfare (whose welfare remains debated). This broad theoretical plane is where we look for standards, among others, such as:

- economic justifications are required to overcome anticompetitive effects;
- workers and shareholder are not legitimate antitrust plaintiffs.

Note that rendering these theoretical does not render them immutable – consumer-focused and efficiency-minded antitrust has enjoyed a remarkable run, but is increasingly isolated on a world-wide scale and has a large and increasing number of detractors in the U.S. as well.

22 James Cooper & William Kovacic, *Behavioral Economics and its Meaning for Antitrust Agency Decision-Making*, 8 J. Law, Econ., & Pol'y 779 (2012).

23 Alan Devlin & Michael Jacobs, *The Empty Promise of Behavioral Antitrust*, 37 Harv. J.L. & Pub. Pol'y 1009 (2014).

24 Christopher R. Leslie, *Can Antitrust Law Incorporate Insights from Behavioral Economics?*, 92 Tex. L. Rev. See Also 53 (2014).

25 John Lopatka & William Page, *Economic Authority and the Limits of Expertise in Antitrust Cases*, 90 Cornell L. Rev. 617 (2005).

The theoretical plane also gives us the *per se* rules both for and against liability. The critics of behavioral antitrust all seem to be operating on the theoretical plane, arguing that when deciding whether to outlaw conduct on a *per se* basis one must average over literally billions of transactions to find a rule that applies for more of them than any other rule. They are thus concerned that an argument to the effect of "but one or more cognitive biases may be at play and we need to accommodate those biases" would clog the system with unwieldy individualized determinations.

The second is the practical plane, where the rules are applied and results in individual cases reached. On the practical plane, economic methods can be used to determine the impact of a single identified course of conduct on a single identified consumer, or group of consumers sufficiently similar in situation to constitute a class. It is here that proponents of behavioral antitrust see its use most readily. If a rule allows proof of an impact, and data suggest the existence of that impact, behavioral economics can offer an explanation for those data. An expert might opine, "yes, we have identified a price effect, and yes, that is sustainable even in the absence of entry barriers."

One view is that this after-the-fact explanation is "decidedly prosaic" because "antitrust law requires . . . *ex ante* predictions."[26] As a practical matter that is frequently not true. When things happen in markets, the ability to explain those things in economic terms may be essential to the application of antitrust rules. This critique also proves far too much. It ignores that after the fact explanations are precisely the experience on which future "*ex ante* predictions" may be made.

Those favoring behavioral antitrust do not, to my knowledge, argue that the enterprise necessitates upending existing standards. It is possible, however, that could one day occur. *Per se* rules develop when experience shows vanishingly small instances of contrary outcomes – for example, if conduct is almost never efficient, it would be illegal *per se*, or if conduct is almost never *inefficient*, it would be legal *per se*. Repeated experiences with conduct and its actual market effects may lead to an adjustment of the standards governing that conduct. This could happen because the behavioralist insight is incorporated into the fabric of antitrust economics at the theoretical level, presumably through appellate rule-making, or it could happen because Congress or the agencies grew tired of waiting for the courts to recognize what experience had proved and adopted the change by legislation or regulation.

VI. CONCLUSION

No different from any economically informed means of fact gathering, behavioral antitrust is a tool that helps to answer antitrust's fundamental questions of whether conduct or changes in market structure will lead to harmful effects. Proponents of its use have spelled out a number of specific instances in which behavioral economics gives a clearer picture of how a market might be expected to operate. Their arguments are explanatory in nature and frequently help to understand why an observed effect has occurred, whether that effect is a cartel surviving longer than theory would predict, a merger leading to a greater or lesser price effect than expected, or monopoly power not being eroded by successful entry despite apparent profit opportunities in the market – among a significant and increasing number of examples. None of the challenges to behavioral antitrust has meaningfully confronted these examples on their own terms.

Behavioral antitrust is also not so new as the flurry of writing over the past decade would suggest. Courts interpreting and applying the antitrust laws have always understood their role to be to determine whether conduct or changes in market structure cause, or can be expected to cause, harm out of proportion to any benefit they produce. Those courts have been receptive to evidence of firm or consumer conduct regardless whether it reflects "rational choice" or decisions that best can be explained as based on cognitive biases.

A question that remains unanswered is the use of behavioral antitrust in defining antitrust standards, including, for example, the sorts of conduct subject to *per se* rules or the rule of reason. The progress of antitrust is best understood as a process of evaluating the effects by experience rather than by theory. That experience will include observations of conduct subject to cognitive biases and, where those observations suggest something is in the main harmful rather than not, or vice versa, a standard may change or solidify. In this way, behavioral antitrust will permeate antitrust more broadly than in individual cases.

At bottom, behavioral antitrust teaches that what we expected in any given circumstance may have been misguided. Better informed by new learning, courts and policy-makers can reach better results. As this happens often enough foundational expectations will improve and standards will adapt to reflect those. The law has always progressed this way and only the most outcome-oriented of reasoning would suggest it should not do so where behavioral antitrust is concerned.

26 Devlin & Jacobs, *supra* note 23, at 1051.

MARCH TO THE MIDDLE? HERD BEHAVIOR, VIDEO ECONOMICS, AND SOCIAL MEDIA

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I. INTRODUCTION

Justice Kennedy in his 2017 decision in *Packingham v. North Carolina*[2] stated that online social media has become our "modern public square" that "allow[s] a person with an Internet connection to 'become a town crier with a voice that resonates farther than it could from any soapbox.'"[3] Justice Kennedy has strong justification for this claim. For many of us, our lives are today largely online lives — and social media, in part, controls our engagement with news and public issues. According to a September 2018 Pew Research Center report,[4] over two thirds of U.S. adults (68 percent) receive most of their news from social media — with 74 percent of all Americans receiving at least some of their news from either Facebook, YouTube, or Twitter.

If their market dominance or unfair commercial practices give Facebook, YouTube, or Twitter an ability to diminish the vitality or diversity of the public square, that ability should concern regulators, particularly the Federal Trade Commission ("FTC") and the Federal Communications Commission ("FCC"). Not only could market power hurt the proper functioning of media markets — by, for instance, allowing a dominant Internet platform to charge advertisers supra-competitive rates — but that power could undermine the performance of our democracy by circumscribing certain views and opinions expressed online. And this circumscribing does not refer to censorship of illegal, threatening, or disruptive speech but rather to limiting viewpoints and opinions sufficiently distant from the median tastes.

While some might find it odd that an unregulated market in social media could create an underperforming marketplace of ideas, this article explores the opposite view. Established thought in video economics that has been applied to broadcast television and radio for most of the 20th century would suggest that the dominant social media platforms have economic incentives to produce a screen experience that caters towards bland, majority tastes. Behavioral economics, in particular research on herd behavior and the bandwagon and group polarizations effects, suggests that individuals may tend towards median views. These effects could feed upon each other to create online experiences in which minority viewpoints may be excluded, leading not to a race to the bottom but a march to the middle.

II. SOCIAL MEDIA AND ANTITRUST

Despite these important, wide-ranging concerns, antitrust and other market regulators have been loath to examine social media and Internet giants. In particular, they have shied away from looking at whether the market dominance of Google, Facebook, Twitter, and YouTube threatens not only the marketplace but the marketplace of ideas. FTC Commissioner Noah Phillips typified this attitude when he argued that his agency should avoid using its antitrust authority to address Facebook, Google, and Twitter's censorship practices. "In a democracy, with a free press, we need to be very careful about using tools of law enforcement to address problems like that," Phillips told C-SPAN's *Communicators*.[5]

This hesitance stems from understandable concerns about the constitutional limits on regulatory power as well as realism over what economic regulation can accomplish. Many would view regulating media companies as government manipulation of public discourse that violates the Constitution.[6] Commissioner Phillips told C-SPAN when explaining his hesitance in regulating social media bias that "using antitrust as a tool to address those biases . . . [conflicts with the] First Amendment." Further, Commissioner Phillips stated that "with respect to the FTC," he did not know . . . [of] any particular capability" to address the potential for social media bias.[7]

Further, the origin of the dominant Internet platforms' market dominance is unusual. While the network effects, which entrench Facebook, Amazon, Twitter, and Google, are not unique to social media, they certainly deploy these effects in new ways. For instance, Google's superior search function is allegedly a result of the size of its unparalleled record of billions of billions of searches. Google likes to brag that it never throws out a search.[8] Because no firm at this point in time could replicate this data, Google enjoys an almost insurmountable barrier to entry to online

2 137 S. Ct. 1730 (2017), quoting *Reno v. Am. Civil Liberties Union*, 521 U.S. 844, 870, 117 S. Ct. 2329, 2344, 138 L. Ed. 2d 874 (1997).

3 *Id.* at 1737.

4 Amanda Zantal-Wiener, "68% of Americans Still Get Their News on Social Media, Even If They Don't Trust It," Hubspot, originally published September 14, 2018, updated December 14 2018, available at https://blog.hubspot.com/news-trends/two-thirds-americans-still-get-news-on-social-media.

5 https://www.c-span.org/video/?454473-1/communicators-noah-phillips.

6 L. A. Powe, Jr., "Disease and Cure? Review of Republic.com by Cass Sunstein," 101 Mich. L. Rev. 1947, 1956 (2003) ("Promoting democratic deliberation [through media regulation] is a game that anyone can play . . . . To separate the good from the bad, the Court has wisely demanded more than a good heart before accepting speech-limiting proposals").

7 *Id.*

8 https://arstechnica.com/tech-policy/2010/03/google-keeps-your-data-to-learn-from-good-guys-fight-off-bad-guys/.

search. As Google's chief data scientist Peter Norvig acknowledged, "we don't have better algorithms than everyone else; we just have more data."[9]

And, it is hard to put social media into an existing category of industrial organization that has an established economic analysis and antitrust regulatory approach. Facebook and Twitter are neither cable nor telephone companies, but like the old telecom giants, social networks' primary job is to facilitate communication between people. Twitter has described itself as a "communications utility,"[10] while Facebook's mission statement was until recently "Making the world more open and connected."[11]

The dominant social media platforms are not media companies, yet Americans receive much of their video entertainment through them. According to marketing research, views of branded video content have increased 99 percent on YouTube[12] and 258 percent on Facebook[13] over the last two years. Indeed, the dominant social media networks can be used to buy things as with Facebook Marketplace, run businesses, and conduct political campaigns. Jean Tirole has commented that big tech and the Internet are places where "[o]ld-style regulation has a hard time finding its footing."[14]

But, in the end, this regulatory reluctance needs a reappraisal. First, the First Amendment does not preclude antitrust scrutiny. The Supreme Court has made clear from at least the time of *Associate Press v. United States*, that the First Amendment allows antitrust laws to protect the free flow of ideas.[15] That case involved the Associated Press ("AP"), which was (and still is) a cooperative association of news organization. Its bylaws at the time prohibited its members from selling news to non-members. The government challenged this arrangement under the Sherman Act, and the Court upheld the Sherman Act claim against First Amendment challenge.

In finding for the government, the Supreme Court ruled that:

> [the] First Amendment, far from providing an argument against application of the Sherman Act, here provides powerful reasons to the contrary. That Amendment rests on the assumption that the widest possible dissemination of information from diverse and antagonistic sources is essential to the welfare of the public . . . . Surely a command that the government itself shall not impede the free flow of ideas does not afford non-governmental combinations a refuge if they impose restraints upon that constitutionally guaranteed freedom.[16]

Further, courts outside the context of the Sherman Act, have approved of structural regulation of media companies against First Amendment challenge for the purpose of furthering and protecting the marketplace of ideas. For instance, in *National Broadcasting Co. v. United States*,[17] the Supreme Court upheld the constitutionality of ownership restrictions and behavioral remedies on broadcasters that the FCC imposed pursuant to the Communications Act of 1934. The Supreme Court reasoned that "the interest of the listening public in the larger and more effective use of radio" and that the "licensee to render the best practicable service to the community reached by his broadcasts" outweighed any First Amendment interest or radio broadcasters.[18]

More recently, the Supreme Court in *Turner Broadcasting v. Federal Communications Commission*[19] made clear that cable companies' First Amendment interests give way to the government's interest to ensure that "the public has access to a multiplicity of information sources . . .

9 https://www.cnet.com/news/tim-oreilly-whole-web-is-the-os-of-the-future/.

10 https://blog.twitter.com/official/en_us/a/2008/welcoming-bijan-and-jeff.html.

11 https://techcrunch.com/2017/06/22/bring-the-world-closer-together/.

12 https://tubularinsights.com/sponsored-content-q2-2017-report/.

13 *Id.*

14 https://qz.com/1310266/nobel-winning-economist-jean-tirole-on-how-to-regulate-tech-monopolies/.

15 326 U.S. 1 (1945).

16 *Associated Press v. United States*, 326 U.S. 1, 20, 65 S. Ct. 1416, 1424–25, 89 L. Ed. 2013 (1945).

17 319 U.S. 190 (1943).

18 *Nat'l Broad. Co. v. United States*, 319 U.S. 190, 216, 63 S. Ct. 997, 1009, 87 L. Ed. 1344 (1943) (quotations omitted).

19 512 U.S. 622 (1994).

for [this access] promotes values central to the First Amendment."[20] Here, the Court upheld the Cable Television Consumer Protection and Competition Act of 1992's requirement for cable systems to carry local broadcasters to promote free over-the-air television. In 2016, the D.C. Circuit, in *US Telecom Association v. FCC*,[21] responding to a First Amendment compelled speech argument against the FCC's net neutrality regulations, held that only applied to "neutral transmission of others' speech, not a carrier's communication of its own message."[22] The First Amendment did not block the FCC's efforts to guarantee that the Internet remains a free and open communications medium.

Similarly, to the degree platforms do not always deliver on their promises of providing open platforms or condition the use of their platforms, the FTC can play a role. When the FCC repealed its Title II "net neutrality" regulations, Verizon, Comcast, AT&T, and Charter attempted to allay these concerns by pledging[23] not to block or throttle lawful content after the FCC scaled back its regulations. Then FTC Chair Maureen Ohlhausen pledged that the FTC would use its Section 5 authority to ensure "that Internet service providers live up to the promises they make to consumers."[24]

Second, supra-competitive advertising rates that monopolistic platforms can charge is a classic antitrust issue — and, indeed, their dominance of advertisement should raise an eyebrow or two. After all, Google and Facebook collected 63 percent of U.S. digital advertising dollars in 2017,[25] with some projections for 2018 as high as 84 percent.[26] And, the Internet tech giants earn most of their money from advertising.[27] In addition, there are allegations of preferential consumer data sharing intended to harm rivals and assist commercial allies.[28]

Third, perhaps more salient than classic antitrust concerns, social media's role in the marketplace of ideas raises concerns that have received the greatest public attention and sparked the greatest outrage. Both left and right have their concerns. Many see social media as a tool for "fake news" and documented, nefarious Russian interference with the U.S. domestic political process. On the other hand, those on the other side of the political spectrum see themselves to be in the crosshairs of the Silicon Valley mandarins. Conservatives ranging from Michelle Malkin;[29] William Jacobson,[30] and Dennis Prager,[31] to the more extreme individuals such as Gavin Mcinnes ("Proud Boys" founder) and Milo Yiannopoulos have been "deplatformed."

At first blush, these actions do not seem to warrant a regulatory response — let alone an antitrust response. The platforms, often claiming an editorial freedom guaranteed by the First Amendment, would argue that if people do not like these purported editorial decisions, they can go elsewhere. An unregulated market in social media platforms is the best guarantee of diversity.

But, is that really true? No one would ever say that if you do not like the telephone company, you are free to start your own. United States law and policy have always placed dominant communications networks under special regulatory frameworks — whether 19th century common carriage for the telegraph and telephone,[32] the 1983 breakup of A&T under the antitrust laws,[33] or other types of regulation for cable systems.[34]

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20 *Turner Broad. Sys., Inc. v. FCC*, 512 U.S. 622, 663, 114 S. Ct. 2445, 2470, 129 L. Ed. 2d 497 (1994)

21 *United States Telecom Association v. FCC*, 825 F.3d 674 (D.C. Cir. 2016).

22 *Id.* at 740.

23 https://arstechnica.com/tech-policy/2018/06/comcast-att-verizon-say-they-have-no-paid-prioritization-plans/.

24 https://www.ftc.gov/news-events/press-releases/2017/12/ftc-fcc-outline-agreement-coordinate-online-consumer-protection.

25 https://www.emarketer.com/Article/Google-Facebook-Tighten-Grip-on-US-Digital-Ad-Market/1016494.

26 https://www.ft.com/content/cf362186-d840-11e7-a039-c64b1c09b482.

27 https://www.adweek.com/digital/facebook-makes-money/.

28 https://www.nytimes.com/2018/12/05/technology/facebook-documents-uk-parliament.html.

29 https://www.creators.com/read/michelle-malkin/06/17/youtube-banned-me-but-not-the-hate-imams.

30 https://www.dailywire.com/news/12418/youtube-bans-conservative-channel-hank-berrien.

31 https://www.nationalreview.com/2016/10/google-youtube-prageru-censorship-prager-university-conservative-videos-censored/.

32 Adam Candeub, "Network Interconnection and Takings," 54 Syracuse L. Rev. 369, 381 (2004) ("By the nineteenth century, at least in the United States, courts applied the category largely to those involved in infrastructure-type industries, such as dock owners, toll bridge and road operators, telegraph operators, and perhaps most important for the development of legal doctrine, railroads.").

33 *United States v. Am. Tel. & Tel. Co.*, 552 F. Supp. 131, 138 (D.D.C. 1982).

34 Turner Brdcst. Sys., Inc. v. FCC (Turner I), 512 U.S. 622 (1994).

Indeed, experience demonstrates the unfeasibility and perhaps even undesirability of competing social networks. Gab has held itself forth as a free speech platform in contrast to Twitter, which has more restrictive speech rules. Gab, in fact, has become a haven for extreme right-wing and racist views. Indeed, the Pittsburgh synagogue shooter was active on Gab.

The extremism of Gab's users could justify strict content rules — or at least some argue. But, there could be other ways to look at the phenomenon. At the beginning of the online explosion, Cass Sunstein in his book, Republic.com, and elsewhere[35] predicted that the Internet would diminish public discourse as intermediaries, such as newspapers, declined and people sought like-minded opinions. The Internet would allow communities of like-minded people to flourish and proliferate, creating echo chambers and diminishing deliberative democracy as a whole. Pushing certain extremist viewpoints off major networks can simply create even stronger echo chambers, which reinforces even more extreme views.

While Big Tech's exclusion of far smaller social networks could raise traditional antitrust concerns, bias and censorship may be hard to remedy under Section 2 of the Sherman Act. Given the amorphous nature of social networks and the product they provide, substitutability would be a difficult concept to understand. Is Twitter substitutable for Facebook, the phone company, or the party down the street? For the same reason, market definition would be difficult to agree upon. Classic antitrust models of increased prices and/or decreased output seem difficult to apply to two-sided markets such as search or Facebook in which the product is provided free in an in-kind exchange for viewer attention. Other modes of economic analysis are therefore possibly useful.

III. LESSONS FROM VIDEO ECONOMICS

What sort of problem would antitrust regulation solve if not a traditional antitrust problem? The answer might be found in the large corpus of regulation built around video economics — the study of broadcast and cable television. At first blush, Twitter, Facebook, and Google do not seem to be program providers because they do not produce entertainment. They simply connect people as do telephone companies. Similarly, one might say that they are not cable companies as they arguably do not distribute video entertainment — although that position would be at odds with their claims, made repeatedly in litigation, that their platforms reflect their own expression and therefore they should receive First Amendment protection for all the editorial decisions made therein.

Another perspective could view that social media is a form of video entertainment or distribution, after all, there is convincing evidence that social media is a substitute for television watching at least for the young. It is simply another screen that entertains us with moving images and text.[36] In a sense then, social media provides a mediated experience just like television or the movies. Accepting that assumption, then Facebook, YouTube, Twitter — and to some extent Google search — simply become platforms for providing eyeballs to advertisers. They entice viewers with a pleasurable screen-mediated experience for which the viewers pay through watching commercials.

If we take the jump and see social media as a sort of television distributor, then there is a long and accepted literature on video economics which says a lot about whether the social media platforms have the incentive to provide a robust diversity of content. For two to three generations, television and radio broadcasters have been regulated with a view to preserve a diversity of voices and a robust marketplace of ideas. The FCC has always regulated with the explicit goal to maximize diversity of viewpoint, particular local perspectives and legitimate minority view. Broadcasters are subject to "no censorship"[37] and equal opportunity rules for legitimate political candidates.[38] The FCC enforces special "public interest" criteria in merger policy, including the promotion of the "widest possible diversity of information sources and services to the public,"[39] which Congress mandated to promote a "diversity of views provided through multiple technology media."[40]

35 Cass Sunstein, Republic.com (2001); Cass R. Sunstein, "Deliberative Trouble? Why Groups Go To Extremes," 110 Yale L. J. 71 (2000) ("The general problem is said to be one of fragmentation, with certain people hearing more and louder versions of their own preexisting commitments, thus reducing the benefits that come from exposure to competing views and unnoticed problems.").

36 Stan J. Liebowitz & Alejandro Zentner, "Clash of the Titans: Does Internet use Reduce Television Viewing?," The Review of Economics and Statistics Vol. 94, 234-245 (2002).

37 https://transition.fcc.gov/Bureaus/Mass_Media/Orders/1996/da961646.txt.

38 https://www.fcc.gov/media/policy/statutes-and-rules-candidate-appearances-advertising.

39 https://www.law.cornell.edu/uscode/text/47/521.

40 https://law.justia.com/codes/us/2014/title-47/chapter-5/subchapter-v-a/part-i/sec.-521.

This economic literature from which this regulation proceeds shows that either under monopoly or competitive conditions, one would not expect video producers to cater to median tastes — leaving out less popular or extremist views. Rather, they have an incentive to ignore or silence minority views.

Hotelling (1929) is usually credited for first observing that markets can produce what he termed "excessive sameness."[41] Consider three ice cream makers who only have capacity to make one flavor of ice cream. Seventy percent of their market prefers chocolate; 15 percent vanilla; and 15 percent strawberry. All three ice cream makers will make chocolate in the hope of getting one third of chocolate lovers or 23 percent of the total market.

Steiner (1952) builds on Hotelling's basic insight about "excessive sameness" to model programming decisions in broadcast television. His model ignores the cost of producing programs and assumes revenue only comes from the number of eyeballs provided to advertisers.[42] Assuming limited channel capacity, and viewers only watch their first choice in programming (and, if not, do not watch at all), Steiner finds that competitive markets produce more sameness than monopoly — although his models allowed for very few programmers.

More current models about programming diversity (Spence & Owen, 1975, 1977 and Wildman & Owen, 1985)[43] allow consumers to express preferences in terms of willingness to pay and account for subscription television in competition to free advertiser-supported television as well as reflect other more realistic assumptions. The results are not unambiguous. But they tend to conclude that "both advertiser-supported and pay television have three biases: against programs that cater to minority-interest tastes, against expensive programs, and in favor of programs that produce large audiences."[44]

Of course, applying these models to Internet platforms is far from straightforward. There are arguments that Internet watching is not like television watching. Unlike the Internet, professionals create television videos and radio songs; social media's content is created in part by normal people, sometimes by quasi-professions, and other times simply reposts of professionally produced content ranging from news stories to videos. Perhaps most important, social networks are networks of people who chose to communicate. From this perspective, social media may be more of a large phone conversation than a video distribution network.

At the same time, one could argue that social media and television are remarkably similar. How different is watching an episode of *Friends* from seeing videos on Facebook of your friends — especially if your friends are attractive and have good haircuts. And, the fact that social networks don't produce material does not mean necessarily that they do not create a specific type of platform. Facebook bans pornography and nudity, and Twitter and the other social networks have elaborate codes of conduct. One could interpret these policies not as a call for civility — but as efforts ensure a non-controversial platform — where viewers would not be shocked by coming across a naked body or an undesired social opinion. Through these rules, the social media platforms express nothing and communicate no idea — they simply create a forum conducive to the greatest number of users.

In that sense, social media provides *one* product: a version of people's lives that will offend or bother as few other people as possible. While this product is unique to each user, it is homogenized for the widest possible audience. This process of homogenization increases the market for social media — but would of course require platforms to weed out upsetting images (or "ideas") that users might encounter while building or creating "their programming." The social media platforms curate potential communities so as to ensure that this creation process will not "run into" nudity or discomforting ideas or anything else that might disrupt the anodyne consumption of online screen time.

Last, social media can serve as a sort of status good or social identifier. Teenagers did not like being on the same network as their grandparents, and flocked to Snapchat and Instagram. Because most people prefer the quantity network effects of Twitter, Gab, which marketed itself as a free speech alternative, is primarily populated by far-right users who do not have access to Twitter, and is often viewed as a place for fascists and racists, which some Gab users sadly take with pride. As with fashion, users say something about themselves through the social media they use.

41 Harold Hotelling, "Stability in Competition," Economic Journal, Vol. 39; No. 153 (Mar. 1929).

42 Steiner, P.O, "Program patterns and preferences, and the workability of competition in radio broadcasting," Q.J. Econ. 66. 194-223 (1952).

43 Michael Spence & Bruce Owen, "Television Programming, Monopolistic Competition, and Welfare," The Quarterly Journal of Economics Vol. 91, No. 1 (Feb., 1977), pp. 103-126; Michael Spence & Bruce Owen, "Television programming, monopolistic coopetition and welfare," in Economics and Freedom of Expression (B. Owen ed., 1975).

44 Steven Wildman & Bruce M. Owen, Video Economics, (Harv. Univ. Press, 1992).

If social media platforms reflect a sort of identity, then no doubt dominant social media platforms have the incentive to create an identity into which the greatest number of people will be comfortable. The largest "community" will be one in which there are fewest barriers to join, where all will be comfortable, and judgment and offense rare. In this way, the biggest community has the most eyeballs to provide to advertisers. Once again, social media has an incentive to purge from this community dissenting views that might make people uncomfortable.

IV. BEHAVIORAL ECONOMICS AND SOCIAL MEDIA

Behavioral economics suggests that certain social and psychological human tendencies could reinforce the push to the mean preference which video economics often predicts. These mechanisms could, in fact, reinforce each other, making this whole market story more compelling and worthier of regulatory attention.

The behavioral economic literature is replete with what is called the "herd effect" and the related social psychological literature speaks of group polarization.[45] In a way, the herd effect is one of the most basic and ubiquitous human tendencies. Americans, French, and Kenyans each act, dress, and adopt the same views (broadly considered from a global perspective).[46] Humans conform. Similarly, group polarization "is among the most robust patterns found in deliberating bodies, and it has been found in many diverse tasks."[47] People tend to adopt the views of those around them — and, in fact, will often defer to the views of others despite their own differing information.[48]

The herd effect has been often observed and well established in finance where experts will often adopt views — and take trading positions — simply because their peers do.[49] In addition, the herding and bandwagon effect have been detected in other types of decisions outside of market behavior. In particular, the effects have been detected in peoples' adoption of sentiments and political opinion[50] and even voting.[51] The herd effect has been documented as affecting judges as well.[52]

More recent research has documented the herd and bandwagon effects online. For instance, research has shown that Internet product ratings seem to be influenced by herding and bandwagon effects.[53] Similarly, the bandwagon effect has been identified as causal in retweeting decisions,[54] online product choices,[55] as well as movie ratings.[56]

45 Cass R. Sunstein, "Deliberative Trouble? Why Groups Go to Extremes," 110 Yale L.J. 71, 85 (2000).

46 Sushil Bikhchandani et al., A Theory of Fads, Fashion, Custom, and Cultural Change as Informational Cascades, 100 J. Pol. Econ. 992 (1992).

47 *Id.*

48 A. Banerjee, "A Simple Model of Herd Behavior," The Quarterly Journal of Economics, Vol. 107, No. 3, pp. 797-817 (1992).

49 Marco Cipriani & Antonio Guarino, "Estimating a Structural Model of Herd Behavior in Financial Markets."

50 Tom W. G. van der Meer, Armen Hakhverdian & Loes Aaldering, "Off the Fence, Onto the Bandwagon? A Large-Scale Survey Experiment on Effect of Real-Life Poll Outcomes on Subsequent Vote Intentions," International Journal of Public Opinion Research, Vol. 28, Issue 1 (2016).

51 Ivo Bischoff & Henrik Egbert, *Social information and bandwagon behavior in voting: An economic experiment*, Journal of Economic Psychology, I, 34, No. 2 (2013), pp 270-284.

52 Andrew F. Daughety & Jennifer F. Reinganum, "Stampede to Judgment: Persuasive Influence and Herding Behavior by Courts," 1 Am. L. & Econ. Rev. 158, 159-65 (1999).

53 Sinan Aral, "The Problem With Online Ratings," MIT Sloan Management Review; Cambridge Vol. 55, Iss. 2, (Winter 2014) pp. 47-52.

54 Juan Shia, Kin Keung Laib, Ping Hua & Gang Chen, "Understanding and predicting individual retweeting behavior," Applied Soft Computing 60, No. 2 (2017) pp. 844–857.

55 Huang, J. H., & Chen, Y. F. (2006), "Herding in Online Product Choice," Psychology & Marketing, Vol. 23, No. 5, pp. 413–428.

56 Young-Jin Lee, Kartik Hosanagar & Yong Tan, "Do I Follow My Friends or the Crowd? Information Cascades in Online Movie Ratings," Management Science, Vol. 61, No. 9, pp. 2241-2258 (2015); Duncan J. Watts & Peter Sheridan Dodds, "Influentials, Networks, and Public Opinion Formation," Journal of Consumer Research, Vol. 34, Issue 4, 1 (2007) pp 441–458.

That sociologists, psychologists, as well as evolutionary biologists have used the effect to explain a variety of human phenomena, suggests an origin of this behavioral tendency in group dynamics or even evolution.[57] Groups have been observed to sanction non-conformist and reward conformists and, therefore, conformity may be related to people's desire to maintain their reputation and their self-conception.[58] In addition, social psychologists have observed how limited "argument pools" can lead to greater conformity within such pools.[59]

Perfectly rational behavior under imperfect information can also lead to herd behavior or "information cascades." An information cascade occurs when a person, with imperfect information, faces a decision and has observed others make the same decision before him or her. It may be rational to follow others who presumably have better information. As Bikhchandani et al. observe, once enough people defer to those who proceed them, each person's decision becomes uninformative to others because everyone is clearly following the herd. At this point, an individual would look to the last "informative" decisionmaker and follow her — thus keeping the information cascade going even knowing it is a cascade.[60]

Social media has the power to create communities that pool information and provide instant feedback to members — feedback, which as the phenomenon of cyberbullying shows — often enforces conformity. These platforms seem ideal places for behavioral tendencies toward herd behavior to proliferate and information cascades occur. If the herd effect occurs in social media, people's political and social views may tend towards the center of an already bland experience that the social media companies parcel out. This narrowing of taste may lead to social media making their offerings even blander — and quickly we could see how consumer preference and social media production leads to a march to the middle. Platforms' incentives reinforce herding effects and vice-versa — all ratcheting peoples' political views and opinions towards the mean while excluding dissenting voices.

V. CONCLUSION

These are, of course, simply preliminary speculations on how consumer's behavioral economic tendencies could, combined with the social media platforms' economic incentives, dampen public discourse. Much more research is necessary to establish the mechanism by which this herding effect occurs online and whether it constricts discussion in significant ways.

And, they do not suggest a remedy — certainly not of the classic antitrust sort. But these concerns should motivate antitrust regulators to take a more active interest in the power of the dominant social media platforms and search engines not simply in the marketplace but also in the marketplace of ideas.

57 Elliott Sober & David Sloan Wilson, Unto Others: The Evolution and Psychology of Unselfish Behavior, (Harv. Univ., 1999).

58 Cass R. Sunstein, "Deliberative Trouble? Why Groups Go to Extremes," 110 Yale L.J. 71, 100 (2000)

59 *Id.*

60 Sushil Bikhchandani et al., "A Theory of Fads, Fashion, Custom, and Cultural Change as Informational Cascades," 100 J. Pol. Econ. 992 (1992); David Hirschleifer, "The Blind Leading the Blind: Social Influence, Fads, and Informational Cascades," in The New Economics of Human Behavior 188, 189 (Mariano Tommasi & Kathryn Ierulli eds., 1995).

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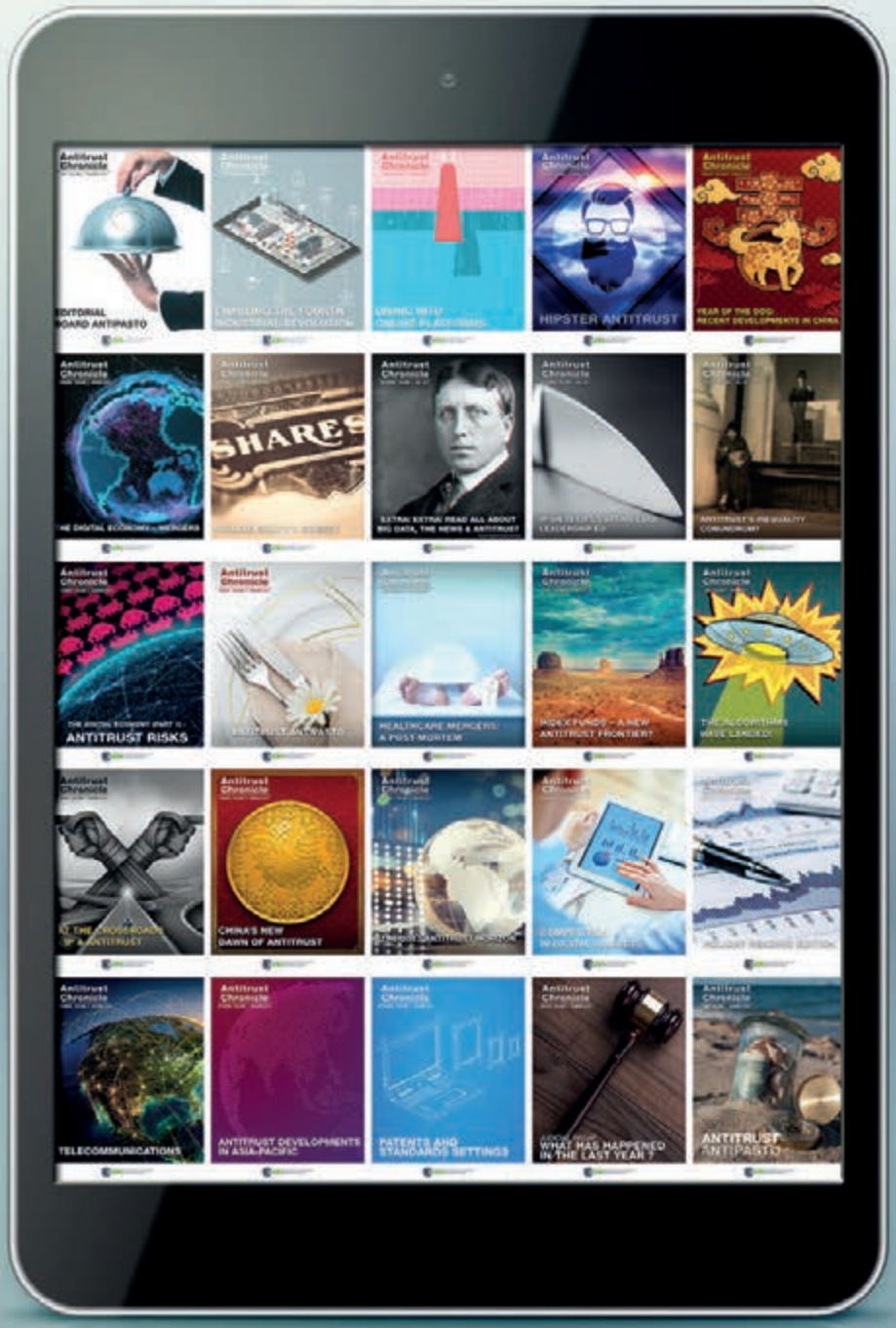


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