



BEHAVIORAL ECONOMICS

OCTOBER 2022



Competition Policy International, a What's Next Media and Analytics Company

TechREG EDITORIAL TEAM

Senior Managing Director
Elisa Ramundo

Editor in Chief
Samuel Sadden

Associate Editor
Andrew Leyden

TechREG EDITORIAL BOARD

Editorial Board Chairman

David S. Evans – GEG & University College London

Martin Cave – London School of Economics

Avi Goldfarb – University of Toronto

Hanna Halaburda – New York University

Liyang Hou – Shanghai Jiao Tong University

Katharine Kemp – University of New South Wales

Kate Klonick – St. John's University

Mihir Kshirsagar – Princeton University

Philip Marsden – Bank of England / College of Europe

Saule Omarova – Cornell University

Eric Posner – University of Chicago

Xavier Vives – IESE Business School

LETTER FROM THE EDITOR

Dear Readers,

Behavioral economics has increasingly become a key part of the toolkit of many policymakers and regulators, with applications across a range of policy fields.

Amelia Fletcher opens by discussing the EU Digital Markets Act (“DMA”), which contains several provisions which reflect important behavioral insights, and in particular the importance of choice architecture for end user decision-making. This article discusses three roles played by such insights. First, several DMA obligations address conduct whose anticompetitive effects arise from the interlinkage between choice architecture and end user behavior. Second, certain DMA obligations more explicitly cover the choice architecture facing users. Third, the heavy emphasis on effectiveness within the DMA creates a potential role for behavioral insights.

Ravi Dutta-Powell discusses how many technology firms also use behavioral economics concepts extensively - however, there has been relatively little application in the field of technology regulation. This article explains what behavioral economics is and how it can be applied to issues in the technology space, and highlights some of the nascent work by regulators to tackle technology-related behavioral issues.

Avishalom Tor discusses how digital nudges – that is, significantly behavioral interventions that use software and its user-interface design elements – are an increasingly pervasive feature of online environments that can shape people’s behavior both online (e.g. changing website cookie settings) and offline (e.g.

taking a flu vaccine due to a text message reminder). While sharing many characteristics of offline behavioral interventions, digital nudges merit specific attention and analysis due to their growing ubiquity and potential potency.

In turn, **Michael Sobolev & Vedran Lesic** describe online choice architecture (“OCA”), which encompasses the set of design features that impact choice in digital environments. From default settings and notifications to personalization and recommender systems, OCA features are present in almost every interaction with technology. Existing evidence on the effects of OCA on human behavior have often been one-sided, focusing either on positive or negative outcomes. In online settings, the effect of OCA practices on consumer welfare is often complicated. In this paper, we describe the design process and practices of OCA, analyze applications of OCA for good and for bad, and discuss future direction for research and practice of OCA design.

Timothy Brennan notes that while most regulatory scrutiny of the big tech sector is couched in terms of competition or lack thereof, behavioral economics may provide rationales outside that framework. Behavioral economics is generally problematic as a policy guide, as it undercuts the basis for benefit cost analysis and invites policy makers to substitute their preferences for those of the public they presumably serve. However, it suggests some potential rationales based on thinking being costly and weakness of will.

Julia M. Ptaschunder describes how the digital millennium leveraged the World Wide Web into a powerful information source. Online internet searchplac-

es guide human everyday decisions. The strategic placement of information in search engine results has become increasingly important in corporate and political settings. Virtual competition derails in negative search engine de-optimization and unethical strategic searchplace manipulation that degrades the perception of a search term by pushing out competitors’ quality content from search engine results. This article discusses technicalities of searchplace discrimination in erasing useful information about competition for negative, unrelated, spamming, or harmful contents.

Finally, **Andrea Asoni** describes how behavioral economics has become an additional tool at the disposal of antitrust agencies and defense counsel. While the findings of behavioral economists are often considered justification for additional government regulation of the free market, a growing behavioral literature suggests caution against excessive intervention. It is sometimes overlooked that behavioral biases that affect consumers and firms, can and often do affect policymakers. Furthermore, because of the nature of the political process, policies may rather institutionalize rather than overcome behavioral biases.

In sum, this set of articles provides valuable insights into the developing field of behavioral economics and its growing list of applications in the regulation of the online world.

As always, many thanks to our great panel of authors.

Sincerely,
CPI Team

TABLE OF CONTENTS

Letter from the Editor	Summaries	Behavioral Insights in the DMA: A Good Start, but How Will the Story End? by Amelia Fletcher	Behavioral Economics and the Regulation of Technology by Ravi Dutta-Powell	Digital Nudging: Potential and Pitfalls by Avishalom Tor	Online Choice Architecture: The Good, The Bad, and The Complicated by Michael Sobolev & Vedran Lesic
04	06	08	16	24	33

BEHAVIORAL ECONOMICS

OCTOBER 2022

40

A General Critique OF Potential “Behavioral Economics” Rationales for Regulating Big Tech: and Specific Possibilities
by
Timothy Brennan

47

Advances in Behavioral Economics and Responsible Competition Leadership: Tackling Searchplace Discrimination
by
Julia M. Puaschunder

56

Quis Custodiet Ipsos Custodes? Behavioral Public Choice Theory and The Debate Over Antitrust Reform
by
Andrea Asoni

64

What’s Next?

64

Announcements

SUMMARIES



BEHAVIORAL INSIGHTS IN THE DMA: A GOOD START, BUT HOW WILL THE STORY END?

By Amelia Fletcher

The EU Digital Markets Act (“DMA”) contains several provisions which reflect important behavioral insights, and in particular the importance of choice architecture for end user decision-making. This article discusses three roles played by such insights. First, several DMA obligations address conduct whose anticompetitive effects arise from the interlinkage between choice architecture and end user behavior. Second, certain DMA obligations more explicitly cover the choice architecture facing users. Third, the heavy emphasis on effectiveness within the DMA creates a potential role for behavioral insights. If gatekeepers are to be effective in promoting fairness and contestability, to comply with the DMA, then they may need to do more to address behavioral biases than the provisions state explicitly “on their face.” But does the DMA go far enough in considering the implications of behavioral economics? Arguably not. This article also describes some residual questions and challenges arising where more clarity could be given or more could usefully be done.



BEHAVIORAL ECONOMICS AND THE REGULATION OF TECHNOLOGY

By Ravi Dutta-Powell

Behavioral economics has increasingly become a key part of the toolkit of many policymakers and regulators, with applications across a range of policy fields. Many technology firms also use behavioral economics concepts extensively - however, there has been relatively little application in the field of technology regulation. This article explains what behavioral economics is and how it can be applied to issues in the technology space, and highlights some of the nascent work by regulators to tackle technology-related behavioral issues. It closes by suggesting some potential future avenues for regulation.



DIGITAL NUDGING: POTENTIAL AND PITFALLS

By Avishalom Tor

Digital nudges — that is, significantly behavioral interventions that use software and its user-interface design elements — are an increasingly pervasive feature of online environments that can shape people’s behavior both online (e.g. changing website cookie settings) and offline (e.g. taking a flu vaccine due to a text message reminder). While sharing many characteristics of offline behavioral interventions, digital nudges merit specific attention and analysis due to their growing ubiquity and potential potency, the opacity of their technological and behavioral mechanisms, and the central role of private actors in their implementation.



ONLINE CHOICE ARCHITECTURE: THE GOOD, THE BAD, AND THE COMPLICATED

By Michael Sobolev & Vedran Lesic

Online choice architecture (“OCA”) encompasses the set of design features that impact choice in digital environments. From default settings and notifications to personalization and recommender systems, OCA features are present in almost every interaction with technology. Existing evidence on the effects of OCA on human behavior have often been one-sided, focusing either on positive or negative outcomes. In online settings, the effect of OCA practices on consumer welfare is often complicated. In this paper, we describe the design process and practices of OCA, analyze applications of OCA for good and for bad, and discuss future direction for research and practice of OCA design. We recommend that designers and researchers measure and capture a wider range of outcomes, beyond user engagement and satisfaction. We also highlight the interplay between data, algorithms and OCA design since many OCA practices are embedded in the design of interfaces and are often data-driven. Therefore, advancing good and preventing bad OCA design might require an approach that goes beyond the individual user or designer, and looks at structural changes across the market.



A GENERAL CRITIQUE OF POTENTIAL “BEHAVIORAL ECONOMICS” RATIONALES FOR REGULATING BIG TECH: AND SPECIFIC POSSIBILITIES

By Timothy Brennan

While most regulatory scrutiny of the big tech sector is couched in terms of competition or lack thereof, behavioral economics may provide rationales outside that framework. Behavioral economics is generally problematic as a policy guide, as it undercuts the basis for benefit cost analysis and invites policy makers to substitute their preferences for those of the public they presumably serve. However, it suggests some potential rationales based on thinking being costly and weakness of will. Beyond behavioral economics, the psychology of preference formation could motivate policy — consider public education — but its application to big tech is amorphous. The potentially most severe concern, that a tiny but violent minority enabled by big tech to organize destructive actions, likely lies outside both behavioral economics and the ability of any regulator or legislature to prevent.



ADVANCES IN BEHAVIORAL ECONOMICS AND RESPONSIBLE COMPETITION LEADERSHIP: TACKLING SEARCHPLACE DISCRIMINATION

By Julia M. Puauschunder

The digital millennium leveraged the World Wide Web into a powerful information source. Online internet searchplaces guide human everyday decisions. The strategic placement of information in search engine results has become increasingly important in corporate and political settings. Virtual competition derails in negative search engine de-optimization and unethical strategic searchplace manipulation that degrades the perception of a search term by pushing out competitors' quality content from search engine results. This article discusses technicalities of searchplace discrimination in erasing useful information about competition for negative, unrelated, spamming, or harmful contents. In light of the negative implications of searchplace discrimination, cyberbullying and online inequalities, behavioral economics and responsible competition leadership can aid in creating inclusive digital worlds. Behavioral insights should draw attention to self-determined internet user empowerment to correct abuse of algorithmic loopholes. Legal advancements, regulatory oversight, economic incentives, technical support and industry rescue funds work towards discrimination-free online searchplaces in favor for quality content over unethical competition. Ethics of online inclusion, law and economics analyses of searchplaces and interdisciplinary dialogue building on searchplace ethics but also human-artificial intelligence algorithm compatibility and cyber-checks-and-balances to tackle searchplace discrimination are expected to become key advancements in behavioral e-ethics and competition leadership of the future.



QUIS CUSTODIET IPSOS CUSTODES? BEHAVIORAL PUBLIC CHOICE THEORY AND THE DEBATE OVER ANTITRUST REFORM

By Andrea Asoni

Behavioral economics has become an additional tool at the disposal of antitrust agencies and defense counsel. While the findings of behavioral economists are often considered justification for additional government regulation of the free market, a growing behavioral literature suggests caution against excessive intervention. It is sometimes overlooked that behavioral biases that affect consumers and firms, can and often do affect policymakers. Furthermore, because of the nature of the political process, policies may rather institutionalize rather than overcome behavioral biases. As such, regulatory solutions to overcome behavioral biases may be inferior to market dynamics which may succeed in eliminating behavioral biases over time. As the debate over the alleged failure of antitrust policy in the past forty years and the need for more aggressive antitrust enforcement intensifies, it becomes vital to understand if and how best to reform antitrust in light not only of the behavioral biases of consumers and firms, but of policymakers as well.

To be
continued...

BEHAVIORAL INSIGHTS IN THE DMA: A GOOD START, BUT HOW WILL THE STORY END?



BY
AMELIA FLETCHER

Amelia Fletcher is Professor of Competition Policy at the University of East Anglia and a Non-Executive Director at the UK Competition and Markets Authority. This paper is written in her academic capacity and does not necessarily represent the views of the CMA. Amelia is grateful for useful discussions with Marc Bourreau, Jacques Crémer, Alexandre de Stree, Richard Feasey, Paul Heidhues, Jan Krämer, Giorgio Monti, Martin Peitz and Vanessa Turner, as well as at the Centre on Regulation in Europe (“CERRE”), Ofcom and Oxera.

The way in which options are presented to people – the so-called “Choice Architecture” they face – can have a dramatic impact on their choices. This key behavioral insight is increasingly well understood and is having ramifications across many policy areas. The UK Competition and Markets Authority recently published a report discussing the implications of online choice architecture for consumer pro-

tection and competition policy (CMA, 2022),² and we can also see its impact in the new EU Digital Markets Act (“DMA”).

This heightened focus on choice architecture reflects the growing recognition that individuals exhibit behavioral biases, which in turn arise from their cognitive limitations. We are not super-calculating fact-based machines.

² <https://www.gov.uk/government/publications/online-choice-architecture-how-digital-design-can-harm-competition-and-consumers>.

Rather, we think about things subjectively, have limited attention, and utilize rules of thumb.

This toolkit serves us reasonably well most of the time. It can be perfectly sensible to accept default options, choose the highest ranked or more prominent recommendations, or stick with the status quo. However, our tendency to do so can also lead us astray. Because our behavior tends to exhibit systematic biases, knowledge of these can be exploited by others. As a simple example, if a firm knows I have a strong predilection for accepting the default option, this can potentially be used to sell me products I don't need, or to discourage me from searching even when I do. The US Federal Trade Commission recently found that such so-called "dark patterns" are on the increase online (FTC, 2022).³

The EU Digital Markets Act imposes new rules on a small set of the largest "gatekeeper" platforms. Recognizing the limited attention of their end users, these platforms have worked hard to make the consumer journey as smooth as possible. This can be beneficial. The use of defaults, for example, can be helpful in reducing the number of active decisions end users have to make, and so ease the adoption of innovative new services. However, it can also be harmful. The EU's 2018 Google Android decision⁴ (recently upheld by The General Court)⁵ found that the use of such defaults in the presence of end user "status quo bias" can enable leverage of market power from one service into another.

During the final stages of negotiations on the DMA, A variety of changes were made which more firmly embedded behavioral insights within the regulation. These changes are broadly positive. This short article discusses three key ways in which insights relating to choice architecture and behavioral biases underpin the final version of the DMA:

1. Several DMA obligations seek to address conduct whose anticompetitive effects arise from the interlinkage between choice architecture and user behavioral biases.
2. Certain DMA obligations more explicitly cover the choice architecture facing users.
3. The heavy emphasis on effectiveness within the DMA also creates a potential role for behavioral insights. If gatekeepers are to be effective in promoting fairness

and contestability, to comply with the DMA, then they may need to do more to address behavioral biases than the provisions state explicitly "on their face."

But does the DMA go far enough in considering the implications of behavioral economics? Arguably not. This article describes some residual questions and challenges arising where more clarity could be given or more could usefully be done.

01

DMA OBLIGATIONS TO ADDRESS ANTICOMPETITIVE EFFECTS ARISING FROM CHOICE ARCHITECTURE

Certain DMA requirements are designed to address conduct, the anti-competitive effects of which are underpinned by the interlinkage between choice architecture and behavioral biases.

For example, a key behavioral insight is that individuals can be highly – and unduly – influenced by ranking and salience. This was important in the 2017 Google Shopping decision,⁶ which sets out how Google was able to leverage its position in general search by demoting rival shopping sites down its search rankings (exploiting "ranking bias") and making its own Shopping Box highly prominent (exploiting "saliency bias"). Likewise, the ongoing Amazon Buy Box case⁷ has its (alleged) anticompetitive effect because consumers have a strong tendency to use the salient offer in Amazon's Buy Box and are far less likely to scroll down or click through to find alternative offers.

Recognizing this vital importance of ranking for end user decision-making, Article 6(5) of the DMA requires that *"the gatekeeper shall not treat more favourably, in ranking and related indexing and crawling, services and products offered by the gatekeeper itself than similar services or products of a third party. The gatekeeper shall apply transparent,*

3 https://www.ftc.gov/news-events/news/press-releases/2022/09/ftc-report-shows-rise-sophisticated-dark-patterns-designed-trick-trap-consumers?utm_source=govdelivery.

4 https://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=1_40099.

5 <https://curia.europa.eu/juris/document/document.jsf?jsessionid=06234DFA904539A9DE7D8C3B327A585E?text=&docid=265421&pageIndex=0&doclang=en&mode=lst&dir=&occ=first&part=1&cid=347>.

6 https://ec.europa.eu/competition/antitrust/cases/dec_docs/39740/39740_14996_3.pdf.

7 https://ec.europa.eu/commission/presscorner/detail/en/statement_20_2082.

fair and non-discriminatory conditions to such ranking and related indexing and crawling.” Recital (52) clarifies that this also covers “*instances where a core platform service presents or communicates only one result to the end user.*”

Similarly, the EU’s ongoing Apple App Store case⁸ partly relates to Apple’s “anti-steering provisions,” which limit the ability of app developers to inform end users of alternative purchasing possibilities outside of apps. Such restrictions restrict competition to the app store by creating both informational and behavioral barriers – they both limit end users’ awareness of alternative purchasing possibilities and make it harder for them to access them.

Again, this concern is addressed by the DMA. Article 5(4) prohibits such provisions, while Article 5(5) ensures that purchases made outside of apps can be used smoothly.

02 DMA OBLIGATIONS THAT MORE EXPLICITLY COVER THE CHOICE ARCHITECTURE FACING END USERS

The role of behavioral insights within the DMA provisions described above is somewhat implicit. However, there are certain DMA obligations which more explicitly cover the choice architecture facing end users.

These essentially take two forms. First, and most prevalent, are a set of provisions that require the gatekeeper to enable end users to switch services. While these are primarily about reducing switching costs, additional wording was added to the DMA at a late stage that has a more behavioral bent. It is no longer simply required that switching is *possible*, but also that it is *easy*. For example:

- Articles 6(3) requires that *the gatekeeper shall allow and technically enable end users to easily change default settings*” in relation to search engines, web browsers and virtual assistants, while Article 6(4) imposes a similar requirement in respect of third party software apps or app stores.
- Article 6(3) requires that end users should be able “*to easily uninstall*” any apps.

- Article 6(13) requires them to ensure that conditions of termination provision “*can be exercised without undue difficulty.*”
- The wording in Articles 6(6) takes slightly different form, but arguably comes to the same thing. Gatekeepers are required not to “*restrict technically or otherwise the ability of end users to switch between, and subscribe to, different software applications and services.*” (All underlining added).

While they may seem innocuous, the terms “*easily*,” “*without undue difficulty*” and “*or otherwise*” are important. We know that real end users are unlikely to act in the way that the regulation intends if it is in any way difficult to do so. There is also ample evidence that gatekeepers are well positioned to tweak the choice environment, sometimes subtly, to make such actions harder, rather than easier. This final terminology should help to prevent this.

The second set of obligations go further. They recognize that it may not be sufficient to enable end users to make choices, or even to make them easily. End users may exhibit such strong “*status quo bias*” that they still fail to act. And if they fail to act, then the interventions will not have their desired impact on fairness and contestability.

This issue is addressed by facilitating the use of prompts and requiring some use of choice screens, which force end users to make an active choice. Specifically:

- Under Article 6(4), gatekeepers must allow third party providers of apps and app stores to prompt end users to decide if they wish to make that app or app store their default. Such prompts are expected to help to overcome “*status quo bias*” and really shift end user choices.
- Under Article 6(3), gatekeepers must require end users to choose – from a list of the main available service providers – their online search engine, virtual assistant, or web browser, at the time of their initial use. Such a choice screen is designed to prevent gatekeepers from benefitting from “*default bias*” by setting their own services as defaults.

⁸ https://ec.europa.eu/commission/presscorner/detail/en/ip_21_2061.

03

BEHAVIORAL INSIGHTS AND THE “EFFECTIVENESS” PROVISIONS OF THE DMA

A third potential linkage between behavioral economics and the DMA lies in the DMA’s heavy emphasis on “effectiveness.” Under the DMA, effectiveness does not simply relate to whether an obligation is formally achieved in itself. For an obligation to be met, it must also be effective in achieving the DMA’s overall objectives of fairness and contestability.

This is seen in the overarching compliance framework, as set out in Article 8.

- Article 8(1) states that: *“The gatekeeper shall ensure and be able to demonstrate compliance with the obligations laid down in Articles 5, 6 and 7 of this Regulation. The measures implemented by the gatekeeper to ensure compliance with those Articles shall be effective in achieving the objectives of this Regulation and of the relevant obligation.”*
- Article 8(2) enables the Commission to specify “the measures that the gatekeeper concerned is to implement in order to effectively comply with the obligations,” and Article 8(7) states that in doing so, *“the Commission shall ensure that the measures are effective in achieving the objectives of this Regulation and the relevant obligation.”*

It is noteworthy that in both underlined sections in the previous bullets, the wording “of this Regulation and” was added in the final wording of the Regulation, presumably to make absolutely clear that effectiveness was to be viewed in the context of the overall objectives of fairness and contestability.

The focus on effectiveness is also seen within individual obligations. Specifically:

- Article 6(4) requires gatekeepers to “allow and technically enable the installation and effective use of” third party apps and app stores.
- Article 6(7) requires gatekeepers to allow “effective interoperability”
- Article 6(9) requires gatekeepers to provide “effective portability of data,” including “tools to facilitate the effective exercise of such data portability.”

- Article 6(10) requires data access for business users that is “effective, high-quality, continuous and real-time.”

This focus on effectiveness within the DMA does not make explicit reference to behavioral considerations. However, they seem likely to be critical in practice.

Indeed, choice architecture is explicitly addressed in Article 13 which relates to anti-circumvention measures. Here, gatekeeper platforms are specifically prohibited from using behavioral techniques or interface design to undermine effective compliance. This includes a prohibition on making the exercise of end user choice unduly difficult by “*offering choices in a non-neutral manner,*” or “*by subverting end users or business users’ decision making via the structure or design of a user interface.*”

How might this emphasis on effectiveness play out in practice?

To consider this, consider the end user data portability requirement under Article 6(9). As is discussed in Recital 59, data portability will be “effective” in promoting contestability if it genuinely enables end user switching and/or multi-homing, and thereby incentivizes gatekeepers and business users to innovate.

This in turn requires that there are no barriers to end users making use of data portability. It seems reasonable to assume that the requirements around effectiveness will prevent gatekeepers from creating behavioral barriers to data portability, such as making end users click through excessive warning screens before porting their data. It should also prevent gatekeepers putting in place rules that restrict third party services encouraging or prompting the use of data portability.

“This focus on effectiveness within the DMA does not make explicit reference to behavioral considerations

But even if gatekeepers do nothing to inhibit take up, that may not be enough. Experience from multiple other markets tells us that enabling users to switch need not lead to them actually switching or multi-homing. In the face of inactive and cautious consumers, even more proactive stimulation may be needed. For example, despite the UK Current Account Switching Service (“CASS”) being successful in eliminating most of the difficulties that consumers faced in switching bank, consumers were insufficiently aware of this and switching rates remained stubbornly low. As a result,

CASS has now been additionally required to engage in the active promotion of its services.

Looking forward, it will be interesting to see whether the Commission seeks to use the requirement of effectiveness to drive similar proactive interventions in an online context – interventions that may even go beyond what the DMS sets out “on its face.”

04

DOES THE DMA GO FAR ENOUGH IN INCORPORATING BEHAVIORAL INSIGHTS?

While these various DMA provisions reflect a far better understanding of behavioral science than might have been expected from the DMA’s initial drafting, there nonetheless remain a number of residual questions and additional challenges.

First, the DMA’s emphasis on users being able to take certain actions “*easily*” or “*without undue difficulty*” is clearly helpful. If end users find it hard to take actions, then they will not do so. But how should these terms be interpreted in practice?

For example, it is required under Article 6(3) that end users should be able to change their default search engine easily. But there are typically multiple access points to search engines on a device. Users can go to a search app, they can go to a particular browser and use its default search engine, they can search via the voice assistant and use its default search engine, they can use text search (or “look-up”) from within another app, or they can use a search widget. Should it be presumed that being able to switch search engine “*easily*” means that end users should be able to switch the default setting for all of these at once? Or – arguably even better – that they should have access to a single screen where they can simply tick which access points they wish to switch?

It is also not clear that sufficient thinking has been done in relation to the different way in which end users interact with voice assistants versus screens. For the former, users are less likely to be able to deal effectively with long lists of options. It is one thing to enable a user to say “Siri, I wish to change my default browser,” it is quite another to think about how the available options can then be presented in a neutral way.

Also, what will firms be expected to do in order to demonstrate compliance with these provisions? This will presumably involve needing to show how easily users can switch default. But this raises the question of how to “audit” choice architecture.

There are established methods for testing the impact of choice architecture, such as A/B testing. A natural way of demonstrating compliance, therefore, would be for gatekeepers to share with the Commission evidence derived from such experimental work. But will this be enough? It may well be that the Commission will need to require additional targeted testing. There may also be merit to its finding a way of systematizing such testing and its reporting, so that all gatekeepers use a common framework.

Second, it is not clear that the regulations take a fully consistent or appropriate approach to the repeating of prompts. Under Article 5(2), which restricts the collection, combination, and cross-use of personal data across services without active end user consent, the CMA states specifically that where consent “*has been refused or withdrawn by the end user, the gatekeeper shall not repeat its request for consent for the same purpose more than once within a period of one year.*”

This wording seems to be partly motivated by concerns around “consent fatigue.” This seems sensible. However, there is no equivalent wording in Article 6(4) that would similarly limit the frequency of prompts from third parties, or allow gatekeepers to do so. As such, there is a serious risk that end users become overwhelmed by prompts from third parties seeking to become their default. This is in turn likely to generate “choice fatigue,” creating a risk either that end users either ignore the prompts, thus dampening their potential impact on contestability, or (even more worryingly) that end users actually make mistakes.

“*For example, it is required under Article 6(3) that end users should be able to able to change their default search engine easily*”

There must also be a risk of such prompts being misleading. In telecoms markets, when it was made too easy for third parties to switch consumers to their own services, we saw the emergence of “slamming” whereby consumers would find they had switched provider without fully realizing it. This would not be a good outcome here, but the risk is not addressed by the DMA, and nor is it clear

that the DMA would allow gatekeepers to step in and ameliorate it.

Third, there can be important tensions in designing choice architecture, and it is not clear that these have been considered fully. For example, in relation to the right to termination (as addressed under Article 6(13)), the associated Recital (63) proposes that *“closing an account or un-subscribing should not be made be (sic) more complicated than opening an account or subscribing to the same service.”*

Whilst this would seem a desirable objective in principle, it may be difficult to achieve in all cases without creating unintended consequences. For example, when end users are setting up a new device, they value being led through the process of signing up to a series of services in a well ordered and straightforward fashion. It is not clear how it would be possible to make it as easy to un-subscribe to these services as to sign up to them without giving the end user regular prompts to consider doing so. But this could easily annoy end users and could even lead to them making mistakes as discussed previously. In practice, it is to be hoped that the Commission would accept a proportionate solution, such as the introduction of easy-to-find cancellation buttons. But this could usefully be clarified.

Likewise, the requirement under Article 5(2) not to repeat consent requests more than annually might seem sensible, but what if a user has switched off location services and then wishes to use a proprietary mapping app. Is the gatekeeper really prohibited from advising the user that they will need to switch on location services to do so?

Fourth, while the DMA is designed to open up end user choice, we would expect end users to have a tendency to choose brand names they already know, and risk averse in terms of trying out new options. This has two important implications.

First, it means that the design of the default choice screens required under Article 6(3) really matters. The precise choice architecture adopted will be critical to their success. There are many different aspects that could become relevant here, from the number of options provided and their ordering, to whether there should be brief descriptions of each option. These options will need to be tested to ensure that the choice screens have their desired impact. Another element that is almost certain to be helpful would be clear reassurance that users can easily reverse their choice later if they wish to do so.

Second, it means that opening up choice for some services could backfire, by enhancing the market position of the biggest players yet further. Take Microsoft Bing for instance. Currently this is the default search engine on Microsoft devices. Despite Bing only having around 5 percent of the EU search market, it seems plausible that Microsoft will be required to offer users an upfront choice of search engine. This in turn may well lead to a further loss of Bing’s market share to Google; presumably not the result the Commission was seeking.

“Whilst this would seem a desirable objective in principle, it may be difficult to achieve in all cases without creating unintended consequences

05

CONCLUSION

Overall, the DMA already exhibits a strong understanding of the importance of choice architecture and end user behavioral biases. However, it is not clear that the DMA has in fact gone far enough in considering the implications of behavioral science. Some challenges and unanswered questions remain. How “easy” do actions need to be to satisfy the obligations, and how will compliance be demonstrated? Is there a risk of end users being overwhelmed or misled by third party prompts, and how can this be addressed? Are there unintended effects of some of the proposals around choice architecture? And is there a risk that greater end user choice could in fact embed market positions even more strongly?

It is to be hoped that many of these questions will be considered and addressed by the Commission during the process of DMA implementation. This is not a simple matter and would require serious resources and expertise. If it can be done, the DMA stands to be the most advanced regulation to date in terms of its embedding of behavioral insights. But if not, its effectiveness may be seriously compromised. ■

“*It is not clear that the DMA has in fact gone far enough in considering the implications of behavioral science*”





BEHAVIORAL ECONOMICS AND THE REGULATION OF TECHNOLOGY



BY
RAVI DUTTA-POWELL

Ravi Dutta-Powell is a Senior Advisor in the Behavioural Insights Team's Australian office who specializes in applying behavioral insights to consumer and regulatory policy.

01 INTRODUCTION

Since the publication of *Nudge* in 2009,² behavioral economics (also referred to as be-

havioral insights or behavioral science) has increasingly become a key part of the toolkit of many policymakers and regulators. It has been applied in policy fields as varied as health, education, taxation, justice, and consumer behavior. This demonstrates a growing recognition that human behavior is complex and varied, and that traditional policy approaches

² Richard H. Thaler & Cass R. Sunstein, *Nudge* (2009).

have often failed to adequately reflect this. However, whilst behavioral economics has seen significant uptake among, for example, financial regulators, it is still relatively new in the field of technology regulation. This article will explain what behavioral economics is, how it can apply to technology, how regulators are already using behavioral economics, and then consider where the future might lie for the use of behavioral economics in technology regulation.

02

WHAT IS BEHAVIORAL ECONOMICS

Behavioral economics arose in response to the failure of traditional economic models to accurately predict human behavior in a range of situations. Traditional economic models assume that consumers make optimal choices all the time, carefully considering all factors and canvassing a wide range of options. In addition, traditional models assume that consumers are not influenced by seemingly irrelevant factors such as the behavior of others, or the way that the choice set is presented.

However, significant empirical work (and indeed, most people's lived experiences) demonstrate that this is not the case. Behavioral economics aims to more accurately model human behavior, by recognizing that decision making is often subject to a series of biases and heuristics, which cause consumers to act in ways that consistently defy traditional models. Rather than assuming perfectly rational behavior,

behavioral economics instead assumes that behavior is guided by "bounded rationality" – that is, rational behavior within certain constraints.^{3,4} Below are three examples of behavioral biases that can affect consumer behavior when engaging with technology.

A. Ordering Effects

A common bias that drives behavior is the primacy bias - we tend to recall (and often favor) the information that is presented to us first. This can lead to better recall of the first ad in a set of ads,⁵ or favoring candidates at the top of an election ballot.⁶ This tendency persists, and may even be stronger, when online or interacting with technology - a review by the UK Competition and Markets Authority ("CMA") concludes that the tendency of those searching online to disproportionately select the top results is, in part, driven by the order in which they are presented.⁷ This trend is consistent across search engines and digital comparison tools, with the first three links accounting for 40-65 percent of total clicks on desktop devices and more than 70 percent of total clicks on mobile devices.⁸ Importantly, it appears that this is not driven by the relevance of these links; it is due to their position on the page - when the order of the links was randomly changed in one study, consumers were still more likely to click on the top three links.⁹

B. Choice Overload

Although people may claim to express a preference for more options, the reality is that in practice people ultimately prefer to choose from a smaller set.¹⁰ Indeed, too many choices can be overwhelming, leading to poorer choices or not making any choice at all.¹¹ When dealing with technology or operating online, consumers face an almost unfathomable number of options when looking to make a choice, and so often fall back on mental shortcuts. This can mean,

3 Herbert A. Simon, *Rationality in Psychology and Economics*, JOURNAL OF BUSINESS, 59, S209-S224, (1986).

4 Daniel Kahneman, *Maps of Bounded Rationality: Psychology for Behavioural Economics*, AMERICAN ECONOMIC REVIEW, 93(5), 1449-1475, (2003).

5 Cong Li, *Primacy effect or recency effect? A long-term memory test of Super Bowl commercials*. JOURNAL OF CONSUMER BEHAVIOUR: AN INTERNATIONAL RESEARCH REVIEW, 9(1), 32-44 (2010).

6 Jonathan G. Koppell & Jennifer A. Steen, *The effects of ballot position on election outcomes*, THE JOURNAL OF POLITICS, 66(1), 267-281, (2004).

7 Competition and Markets Authority, *Online search: Consumer and firm behaviour*. CMA REPORT (7 April 2017), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/607077/online-search-literature-review-7-april-2017.pdf.

8 *Id.*

9 Nick Craswell et al, *An experimental comparison of click position-bias models* in WSDM '08: PROCEEDINGS OF THE INTERNATIONAL CONFERENCE ON WEB SEARCH AND WEB DATA MINING (2008).

10 Dilip Soman, *THE LAST MILE: CREATING SOCIAL AND ECONOMIC VALUE FROM BEHAVIOURAL INSIGHTS* 54-61, (2015).

11 Alexander Chernev et al., *Choice overload: A conceptual review and meta-analysis*, JOURNAL OF CONSUMER PSYCHOLOGY, 25(2), 333-358 (2015).

for example, that consumers are more likely to rely on brand familiarity, rather than product features, when making a choice online.¹²

C. Framing Effects

Changing the way that information is presented can heavily influence the way a decision is made, even though the underlying information stays the same. Beyond the basic presentation of options, there is contextual information that firms can present that inform consumer perception of the options and market as a whole. Some of these are marketing techniques that provide certain information which is true, but highlights certain features. For example, many travel websites will seek to motivate consumers to purchase by highlighting that there are a limited number of rooms or seats left at a particular price (even though there may be many rooms or seats available at other prices). This is designed to not only create a sense of scarcity, but also seeks to exploit our desire to see social proof that others are making similar choices to us.

03

WHY BEHAVIORAL ECONOMICS MATTERS FOR TECHNOLOGY REGULATION

Behavioral economics is an important concept for any policy or regulatory environment, but it is particularly relevant for technology and online behaviors because there is substantial evidence that many behavioral biases are exacerbated online or when using a screen. For example,

multiple studies have shown that consumers have poorer comprehension when reading information on a screen as opposed to on printed paper^{13,14} – even when the studies feature modern screens that are often of higher quality than some printed materials. Hence, if consumers are absorbing information poorly, they may be more likely to rely on behavioral biases.

“Behavioral economics is an important concept for any policy or regulatory environment, but it is particularly relevant for technology and online behaviors because there is substantial evidence that many behavioral biases are exacerbated online or when using a screen

Similarly, the excess of choices available online means that choice overload is far more likely, and there is evidence that consumers are much more sensitive to small “frictions” in a process,¹⁵ such that they will generally only tolerate very low search costs (much lower than in offline environments). Indeed, smaller screens mean that the top few links are even more valuable, and there is some evidence that consumers are even less likely to scroll down to lower parts of the results page when viewing on a mobile phone.¹⁶

More broadly, consumers may be more likely to spend money on products through technology or online - evidence shows that consumers are more likely to spend, and to spend more, when they are using digital payment methods (as compared to using physical cash).¹⁷ Psychologically, consumers have an aversion to parting with cash, as the “pain” of spending is more real - however, when paying through digital methods that “pain” does not exist, and in

12 Michael R. Baye et al. *What's in a name? Measuring prominence, and its impact on organic traffic from search engines*, INFORMATION ECONOMICS AND POLICY, 34, pp44–57, (2016).

13 Anne Mangen et al. *Reading linear texts on paper versus computer screen: Effects on reading comprehension*, INTERNATIONAL JOURNAL OF EDUCATIONAL RESEARCH, 58, 61-68 (2013).

14 Daniel M. Oppenheimer et al. *Instructional manipulation checks: Detecting satisficing to increase statistical power*, JOURNAL OF EXPERIMENTAL SOCIAL PSYCHOLOGY, 45(4), 867-872 (2009).

15 Christopher Holland & Julia Andrea Jacobs, *An Analysis of Consumer Search Behaviour in the US and Germany using Online Panel Data*, ACADEMY OF MANAGEMENT PROCEEDINGS (Vol 2014, No 1, p11764) (2014).

16 Anindya Ghose et al. *How is the Mobile Internet Different? Search Costs and Local Activities*, INFORMATION SYSTEMS RESEARCH, 24(3), 613–631 (2013).

17 Elizabeth C. Hirschman, *Differences in Consumer Purchase Behavior by Credit Card Payment System*, JOURNAL OF CONSUMER RESEARCH, 6(1), 58-66, (1979).

fact even the cost may be deferred if the consumer uses a credit card.¹⁸

Hence, there are a broad range of ways that technology and online interactions can lead to detrimental consumer outcomes, often more so than in other contexts. As such, it is no accident that regulators are increasingly taking a keen interest in the ways in which behavioral economics influences consumer behavior with regards to technology, but also when thinking about potential interventions and regulatory measures.

04 HOW BEHAVIORAL ECONOMICS IS BEING APPLIED TO TECHNOLOGY REGULATION

A number of recent activities by regulators have been clearly driven by an understanding of behavioral economics. Some behavioral economists have highlighted the emerging concepts of “sludge” - essentially, using behavioral concepts to make certain behaviors more difficult to complete. When used by technology or online firms, this is often referred to as “dark patterns.” The classic example in an online context is the asymmetry between subscription and cancellation - the subscription process is made to be easy to find and as streamlined free as possible. In contrast, the process to cancel is typically far more hidden, more complex, and can even involve extra effort such as calling during certain hours or filling out a detailed form.

These frictions in the cancellation process are deliberate - even the friction involved in canceling just a trial subscription is enough to discourage many people. This is strikingly

illustrated in a natural experiment following a 2007 U.S. Federal Trade Commission (“FTC”) decision to close down a company charging ongoing fees for worthless subscriptions. Customers enrolled for more than six months before the ruling were required to take action (by mailing a form or making a phone call) to cancel their memberships, while more recent customers were told their subscriptions would be canceled, unless they took action for their subscriptions to continue. Cancellations increased from 63.4 percentage points among those required to take an action, to 99.8 percent among those who were required to do nothing.¹⁹

A number of regulators have already flagged this and other examples of dark patterns as a specific concern - for example, the Australian Consumer and Competition Commission’s recent Digital Platform Services Inquiry specifically identified a number of dark patterns, such as the difficulty of canceling paid subscriptions and managing privacy settings.²⁰ Similarly, the FTC recently issued an enforcement policy statement that warned companies against using illegal dark patterns, after having conducted a number of related enforcement activities.²¹

Perhaps the most notable jurisdiction to take action, however, is Germany, where the recent Fair Consumer Contracts Act (“FCCA”) made significant changes to the way that consumers interact with online subscriptions. To combat the impact of cancellation frictions, the FCCA includes a provision that requires cancellation of subscriptions to be possible in effectively two clicks - the link to the cancellation page must be prominently displayed and clearly labeled. On this page, the FCCA specifies what information the business can collect (including a means of identification and reasons for termination), and that there must be a confirmation button that is clearly labeled and allows consumers to cancel once clicked.²²

However, the law goes beyond just cancellations. Recognizing that inertia - the tendency to stick with the *status quo* - is one of the most powerful forces that drives behavior, the new law also prohibits automatic extensions of a year after the first two years. Instead, contracts can be extended

18 Dilip Soman, *The Effect of Payment Transparency on Consumption: Quasi-Experiments from the Field*, *MARKETING LETTERS*, 14(3), 173-183, (2003).

19 Robert Letzler et al, *Knowing When to Quit: Default Choices, Demographics and Fraud*, *THE ECONOMIC JOURNAL*, 127(607), 2617-2640 (2017).

20 Australian Competition and Consumer Commission, *Updating competition and consumer law for digital platform services*, *DIGITAL PLATFORM SERVICES INQUIRY DISCUSSION PAPER NUMBER 5*, <https://www.accc.gov.au/system/files/Digital%20platform%20services%20inquiry.pdf>.

21 Press release, U.S. Federal Trade Commission, *FTC to Ramp up Enforcement against Illegal Dark Patterns that Trick or Trap Consumers into Subscriptions* (October 28, 2021).

22 Konstantin Ewald & Philipp Sümmerrmann, *A new termination button and other rules for Germany under the Fair Consumer Contracts Act*, *VIDEO GAMES LAW BLOG* (October 14, 2021), <https://gameslaw.org/a-new-termination-button-and-other-rules-for-germany-under-the-fair-consumer-contracts-act/>.

indefinitely, with consumers having the right to cancel with notice of no more than one month. Alternatively, firms can enter into a new contract or gain express permission to extend the contract by a further year.²³

This targets firms that rely on inattentive or busy consumers who may forget to cancel a subscription in time, and then find themselves stuck paying for another year of a contract that they were not interested in. In this situation, it is not uncommon for consumers to continue the subscription as they believe the money will be “wasted” otherwise (an example of a behavioral bias known as the sunk cost fallacy)²⁴ - only to forget to cancel before the next renewal. Now, consumers can opt out of a subscription after two years with just a month’s notice.

Other regulators have considered issues beyond dark patterns, and focused on behavioral economics tactics that could be considered misleading or deceptive. The CMA has previously taken action against travel booking websites, specifically focusing on some of the framing issues discussed above. Some of the practices that the CMA focused on included highlighting that other consumers were looking at the same hotel (even though they may be searching for different dates), strategically placing sold out hotels within search results to create a sense of urgency and scarcity, and promoting discounts that included comparisons with prices that weren’t relevant to a customer’s search (for example, comparing a weekend room rate with a weekday room, or comparing the price of luxury suite with a regular room).²⁵

“*These frictions in the cancellation process are deliberate - even the friction involved in cancelling just a trial subscription is enough to discourage many people*”

23 *Id.*

24 Hal R. Arkes & Catherine Blumer, *The psychology of sunk cost*, ORGANIZATIONAL BEHAVIOR AND HUMAN DECISION PROCESSES, 35(1), 124-140 (1985).

25 Press release, UK Competition and Markets Authority, Hotel booking sites to make major changes after CMA probe (February 6, 2019).

26 Elisabeth Costa and David Halpern, *The behavioural science of online harm and manipulation, and what to do about it*, BEHAVIOURAL INSIGHTS TEAM REPORT (April 15, 2019), https://www.bi.team/wp-content/uploads/2019/04/BIT_The-behavioural-science-of-online-harm-and-manipulation-and-what-to-do-about-it_Single.pdf.

05

WHAT THE FUTURE COULD HOLD

There are many potential avenues for regulators to incorporate behavioral economics into the way that they regulate technology firms. A recent report from the Behavioral Insights Team covering online harms and manipulations lists a number of potentially behaviorally informed interventions to combat the issues discussed above, as well as a wider range of technology challenges.²⁶ Below, we highlight a small sample of some of the potential directions that regulators might take.

A. Symmetry by Default

Similar to the approach taken in Germany, it is likely that more regulators will scrutinize subscription services more closely. We would expect that the overarching principle that “it should be as easy to cancel as it is to subscribe” will be applied more widely - whether for mailing lists, subscriptions or just engaging in a platform generally. This could be done through prescriptive regulation setting out exactly how it is to be operationalized, but could also be done with a more principled approach. Regardless, technology firms will need to invest effort in ensuring that their cancellation processes are easy and low-friction (and in some cases, may need to actively undo deliberate frictions that they have introduced).

B. Broader Choice Architecture Changes

Building on the concept of making cancellations as easy as subscriptions, it is also likely that regulators will consider the broader choice architecture of online environments. For example, another area where dark patterns seem apparent is with respect to control over personal data and settings on online platforms. It can be notoriously difficult to find and adjust settings for privacy and data sharing, with the process often changing. We have already seen regulators take action in this space – the EU’s General Data Protection Regulation sets out detailed rules and regulations for how data is to be handled, and similar provisions have already been

adopted in several U.S. states.^{27,28} In future, more jurisdictions are likely to take up similar regulations, and regulators might consider specifying exactly the type of information that should be available to consumers, how it needs to be presented, and how easily consumers can change settings (similar to the requirements for cancellation process in Germany being no more than two clicks away).

C. Using Data to Predict Vulnerability

In a number of different regulated markets, there is an expectation that firms will treat consumers who are vulnerable or in hardship with extra care. For example, it is common to have requirements for utilities or financial services providers to take extra care for potentially vulnerable consumers. A similar regime could be applied to online behaviors and interactions with technology. For example, it is trivial for firms to identify if a consumer is spending large sums on gambling sites, consistently shopping online at odd hours, or showing addictive patterns of behavior. Indeed, many different technology firms will potentially be able to identify this behavior - banks, retailers, search engines, and arguably even social media platforms. However, at the moment, none of them have any obligations to identify these behaviors, nor to take any corrective action (indeed, some businesses arguably have an incentive to do the opposite). In future, technology firms and those that operate online might be required to take more active steps where harmful behavior is identified - for example, banks might prompt consumers to set up spending blocks, websites might prompt consumers to use self-exclusion tools, and search engines and platforms could promote results and links that help consumers combat negative behaviors.

Note, this does raise some ethical and privacy issues - who should decide when to intervene, and how? How will it be overseen? What is the threshold for intervention? These issues will also need to be explored and addressed.

D. Increasing Use of Online Testing

More innovation in the way that regulators work is likely to come as well. Regulatory experimentation and testing, using behavioral economics concepts and applying rigorous evaluations, are already common in other policy areas (for example, financial regulation). Regulators will conduct experiments in the field or using panels of consumers to test potential interventions. Given the target for tech regulation, however, online testing is a particularly useful tool - it can be used to mock up online environments and test the impacts of small changes and behavioral economics interventions. For example, similar experiments have already been used to test whether behaviors can be shifted for gamblers,²⁹ consumers using online shopping platforms,³⁰ or just individuals reading terms and conditions.³¹ In future, regulators are likely to take more active steps to test interventions in simulated environments before rolling them out to technology firms, especially if technology firms are uncooperative when it comes to testing regulatory interventions on their platforms.

“In a number of different regulated markets, there is an expectation that firms will treat consumers who are vulnerable or in hardship with extra care

27 Sarah Rippy, *Colorado Privacy Act becomes law*, THE PRIVACY ADVISOR (July 8, 2021), <https://iapp.org/news/a/colorado-privacy-act-becomes-law/>.

28 Sarah Rippy, *Virginia passes the Consumer Data Protection Act*, THE PRIVACY ADVISOR (March 3, 2021), <https://iapp.org/news/a/virginia-passes-the-consumer-data-protection-act/>.

29 Aisling Ni Chonaire, *Defaulting deposits, limiting harm*, BEHAVIOURAL INSIGHTS TEAM BLOG (June 29, 2022), <https://www.bi.team/blogs/defaulting-deposits-limiting-harm/>.

30 Izzy Brenan & Natalia Shakhina, *Pre-owned: Using environmental and cost-saving messages to encourage buying second-hand*, BEHAVIOURAL INSIGHTS TEAM BLOG (December 21, 2021), <https://www.bi.team/blogs/pre-owned-using-environmental-and-cost-saving-messages-to-encourage-buying-second-hand/>.

31 Behavioural Insights Team, *Best Practice Guide: Improving consumer understanding of contractual terms and privacy policies: evidence-based actions for businesses*, BEHAVIOURAL INSIGHTS TEAM REPORT (August 2019), https://www.bi.team/wp-content/uploads/2019/07/BIT_WEBCOMMERCE_GUIDE_DIGITAL.pdf.

06

CONCLUSION

Behavioral economics has become a core part of many regulators' and policymakers' toolkits over the past decade, with jurisdictions across the world incorporating insights into their work. Many technology firms have also already incorporated behavioral economics concepts into their operations, either explicitly or implicitly - concepts such as manipulating frictions, using ordering and framing effects, and designing the choice architecture to encourage certain behaviors are all, at their heart, rooted in behavioral economics.

We have already seen regulators take action where they see clear behavioral harms and poorly designed choice architectures. As regulators and consumers become more aware of the impact that behavioral economics concepts can have on our behavior, especially online, it is likely that this focus on behavioral economics will grow further, and that regulators will start to look more closely at potential behavioral barriers or enablers when making regulatory decisions. ■

“*We have already seen regulators take action where they see clear behavioral harms and poorly designed choice architectures*”



DIGITAL NUDGING: POTENTIAL AND PITFALLS



BY
AVISHALOM TOR

Professor of Law and Director, Research Program on Law and Market Behavior, Notre Dame Law School (ND LAMB). This article draws on my keynote lectures on “Digital Nudging” at the Lucerne conference on the *Law and Economics of the Digital Transformation* and on “The Costs of Personalized Digital Nudging” at the BIDEEM conference on *Personalisation and Discrimination in a Fundamental Rights Perspective* at Copenhagen Business School, further developed in Avishalom Tor, *The Contours and Challenges of Digital Nudging*, in *LAW AND ECONOMICS OF THE DIGITAL TRANSFORMATION* (KLAUS MATHIS & AVISHALOM TOR EDS., *forthcoming* 2023).

01 INTRODUCTION

To advance their policy goals, governments and other organizations have been employing behavioral instruments — also known as

nudges — for some time now,² but the advent of digital nudges is more recent. Digital behavioral interventions are distinct from their offline counterparts in their deployment of software and its user-interface design elements and are an increasingly pervasive feature of online environments. These instruments can shape behavior online — e.g. when they encourage consumers to change their website privacy settings or to donate to a charity — as well as

2 E.g. KLAUS MATHIS & AVISHALOM TOR (EDS.), *NUDGING — POSSIBILITIES, LIMITATIONS AND APPLICATIONS IN EUROPEAN LAW AND ECONOMICS* (2016); ADAM OLIVER, *THE ORIGINS OF BEHAVIOURAL PUBLIC POLICY* 110–11 (2017); Avishalom Tor, *The Law and Economics of Behavioral Regulation*, 18 *REV. L. & ECON.* 1 (2022).

offline, as when people decide to take a flu vaccine at their annual medical checkup following a text message reminder from their health insurer.

Digital nudges share many features of offline behavioral interventions, yet merit particular attention and analysis due to their potential ubiquity across online platforms, social networks, other applications, and electronic devices, which brings into sharper relief the potential and pitfalls of nudges more generally. Moreover, digital nudging raises some unique — or at least qualitatively different — issues compared to offline nudging, because of its potentially greater potency (e.g. due to the possibility of personalized interventions using artificial intelligence, machine learning, and big data), the opacity of the technological and behavioral mechanisms through which it shapes people's judgments and decisions, and the central role of private intermediaries or independent private actors like internet platforms in its implementation.³

02

OFFLINE NUDGES: SOME BASICS

Behavioral regulation has been on the rise for some time now, beginning shortly after the publication of Thaler and

Sunstein's 2008 book *Nudge: Improving Decisions about Health, Wealth, and Happiness*, which received widespread public attention.⁴ Regulators and other policymakers increasingly turn to those significantly behavioral interventions as an integral part of their efforts to shape individual behavior in most major policy domains, including health, safety, education, finance, environmental protection, tax compliance, public service delivery and more.⁵ Recent national responses to the coronavirus pandemic vividly illustrated this behavioral turn, with nudges employed to promote widespread vaccination, complement quarantine or masking mandates, or encourage social distancing practices.⁶

Nudging draws on behavioral science to inform policy design.⁷ While traditional regulatory instruments affect behavior by imposing constraints (as mandates or bans do), using economic incentives (as in the case of taxes or subsidies), or disclosing unavailable or costly information, nudges rely on “softer” behavioral tools, like more effective or persuasive information presentation, the framing of the available choices, the selection of defaults, or the communication of social information.⁸ Notably, while Thaler and Sunstein originally offered a somewhat narrow definition of nudging,⁹ the expansive literature on behavioral regulation now encompasses a host of nudge usages, with most commentators using the term broadly, as a loose shorthand for policies with some behavioral component or connection.¹⁰

The popularity of offline nudging owes, in large part, to the perception that it offers a more palatable and cost-effective form of regulation.¹¹ Policy makers may believe that nudges are politically more feasible than traditional regulation, since

3 The preliminary assessment of digital nudges offered here focuses on the welfare effects of these instruments — namely, their private benefits and costs — though nudges raise other legal questions and normative concerns. See, e.g. the sources referenced in Avishalom Tor, *Nudges that Should Fail*, 4 BEHAV. PUB. POL'Y 316, n. 1 (2020).

4 RICHARD H. THALER & CASS R. SUNSTEIN, *NUDGE: IMPROVING DECISIONS ABOUT HEALTH, WEALTH, AND HAPPINESS* (2008). The book already sold over 2 million copies before the recent publication of an updated version as RICHARD H. THALER & CASS R. SUNSTEIN, *NUDGE: THE FINAL EDITION* (2021).

5 For instance, in his front-cover praise of the Final Edition, Nobel prize winner Daniel Kahneman states: “Few books can be said to have changed the world, but *Nudge* did.” This reality is reflected, for instance, in the OECD's Behavioral Insights web page reporting that there are 202 “institutions around the world applying behavioural insights to public policy” at <https://www.oecd.org/gov/regulatory-policy/behavioural-insights.htm>.

6 See generally Doron Teichman & Kristen Underhill, *Infected by Bias: Behavioral Science and the Legal Response to COVID-19*, 47 AM. J. OF L. & MED. 205 (2021).

7 Brigitte C. Madrian, *Applying Insights from Behavioral Economics to Policy Design*, 6 ANN. REV. OF ECON. 663 (2014); Avishalom Tor, *The Critical and Problematic Role of Bounded Rationality in Nudging*, in *NUDGING — POSSIBILITIES, LIMITATIONS AND APPLICATIONS IN EUROPEAN LAW AND ECONOMICS* 3 (KLAUS MATHIS & AVISHALOM TOR EDS., 2016).

8 Thaler and Sunstein, *supra* note 2; Avishalom Tor, *The Target Opportunity Costs of Successful Nudges*, in *CONSUMER LAW AND ECONOMICS* 3 (KLAUS MATHIS & AVISHALOM TOR EDS., 2021).

9 Sunstein and Thaler, 2003, p. 120; Thaler and Sunstein, 2008.

10 See, e.g. Anne-Lise Sibony & Alberto Alemanno, *The Emergence of Behavioural Policy-Making: A European Perspective*, in *NUDGE AND THE LAW: A EUROPEAN PERSPECTIVE* 1, 2 (ALBERTO ALEMANNO & ANNE-LISE SIBONY, EDS., 2015).

11 For other attractions of behavioral regulation see Tor, *supra* note 2.

large segments of the public — often a majority — in many democratic nations appear to find some common nudges acceptable.¹² Regulators in democratic societies may also prefer non-coercive behavioral interventions that leave citizens with greater freedom of choice than some forms of traditional regulation.¹³ In addition, there is a widespread view that nudges make cost-effective policy instruments is due to their low implementation costs — that is, nudges do not require resource-intensive enforcement efforts as mandates or bans and do not otherwise burden public budgets as do some financial incentive policies (e.g. subsidies).¹⁴

Notwithstanding the benefits of behavioral interventions, however, more recent scholarship also highlights some of their limitations and costs. For one, empirical studies of nudge efficacy suggest that while nudges can be efficacious the absolute magnitude of their effects is often modest, with the notable exception of defaults that commonly have substantial effects on choice.¹⁵ A recent meta-analysis (that excluded defaults) further found that the effect sizes of actual real-world interventions deployed by major governmental nudge units are substantially smaller than those reported in the academic literature and of limited absolute magnitude.¹⁶

“**The popularity of offline nudging owes, in large part, to the perception that it offers a more palatable and cost-effective form of regulation**”

These findings show that although nudges can produce behavior change at scale their real-world efficacy frequently may be limited. At the same time, the results of behavioral interventions in the academic literature reveal that some nudges — most notably, but not only, defaults — are capable of producing substantially larger effect sizes, with the efficacy of specific interventions depending on myriad factors of the particular nudge, including its specific features, the behaviors it targets, whether it complements a traditional intervention or substitutes for it, and more.¹⁷

Beyond concerns about nudge efficacy, current research further reveals that these policies can be much costlier than they appear. Specifically, nudges that entail only limited direct implementation costs can generate significant private costs, particularly when they are efficacious. These costs include direct cognitive, emotional, or monetary costs to some of the individuals targeted by behavioral policies, as well as the costs borne by private third parties due to behavior changes brought about by successful nudging.¹⁸

However, the most significant costs of most behavioral regulation typically are the private opportunity costs to individuals whose behavior it successfully changes.¹⁹ All successful interventions, including those that make their targets better off on balance, entail opportunity costs — namely, the now-forgone benefits these individuals obtained from their former course of action. Yet, successful nudges are capable imposing even greater opportunity costs on people when causing them to make personally detrimental behavior changes.²⁰ This is apparent, for instance, when regulators concerned with public welfare seek to reduce harmful environmental externalities by nudging consumers to conserve energy (e.g. by mailing them Home Energy Reports — letters that compare their consumption to that of their neighbors and imply a social norm favoring energy conservation.²¹ All successfully nudged households inevitably forgo the benefits of their previous, higher energy usage (e.g.

12 E.g. Janice Jung & Barbara Mellers, *American Attitudes Toward Nudges*, 11 JUDGMENT & DECISION MAKING 62 (2016); Sunstein et al. *Trusting Nudges? Lessons from an International Survey*, 26 J. EUR. PUB. POL'Y 1417 (2019).

13 CASS R. SUNSTEIN & LUCIA A. REISCH, TRUSTING NUDGES: TOWARD A BILL OF RIGHTS FOR NUDGING (2019).

14 E.g. Sibony and Alemanno, *supra* note 7.

15 Dennis Hummel & Alexander Maedche, *How Effective is Nudging? A Quantitative Review on the Effect Sizes and Limits of Empirical Nudging Studies*, 80 J. BEHAV. & EXPERIM. ECON. 47 (2019).

16 Stefano DellaVigna & Elizabeth Linos, RCTs to Scale: Comprehensive Evidence from Two Nudge Units (2021) (SSRN working paper, <https://www.nber.org/papers/w27594>).

17 E.g. Hummel & Maedche, *supra* note 15; Katherine L. Milkman et al., *A Megastudy of Text-Based Nudges Encouraging Patients to Get Vaccinated at an Upcoming Doctor's Appointment*, 118 PROCEED. NAT'L ACAD. SCI., e2101165118 (2021).

18 Avshalom Tor, *The Private Costs of Behavioral Interventions*, 72 DUKE L. J. (forthcoming 2023).

19 Avshalom Tor, *The Target Opportunity Costs of Successful Nudges*, in CONSUMER LAW AND ECONOMICS 3 (KLAUS MATHIS & AVISHALOM TOR, EDS.).

20 Tor, *supra* note 18.

21 Hunt Allcott, *Social Norms and Energy Conservation*, 95 J. PUB. ECON. 1082 (2011).

greater indoor comfort). Moreover, at least some energy consumers — like those who reduce usage only to avoid the “moral tax” aspect of a purported social-norm nudge — can end up bearing opportunity costs that exceed their benefits from lower energy consumption.²²

As with traditional regulation, the behavior changes produced by nudging can impose economic costs on non-consumer third parties. To illustrate, Home Energy Reports that lead consumers to reduce their energy consumption produce net revenue losses for energy retailers due to their diminished sales.²³ From the perspective of energy retailers, in fact, the losses from reduced use are the same irrespective of the mechanism employed to change consumer behavior.

Of course, the often-substantial opportunity costs and other private costs that accompany successful behavioral interventions do not necessarily render these policies undesirable. Nudges increase social welfare when their overall benefits exceed their overall costs, and they are particularly attractive when they produce net private benefits — that is, when they improve individual well-being on balance enough to also make up for any attendant costs to third parties or to the public. Nonetheless, the prevalence and magnitude of private costs militate for requiring a demonstration that proposed behavioral interventions offer society net benefits, just as expected of traditional regulation.²⁴

03 DIGITAL NUDGES: POTENTIAL

The more recent and ongoing development of digital nudges is at the intersection of behavioral science and technological innovation in digital environments. These behavioral instruments can be distinguished from their offline predecessors by the unique medium they use to deliver interventions. Specifically, digital nudges employ software and its user interface design elements²⁵ — those aspects of computer systems with which humans interact — to shape the behavior of the individuals they target.²⁶

In our current technological environment, people spend a large portion of their time interacting with sophisticated computer systems, from personal computers, through smartphones, to countless other digital devices that pervade daily life at home, work, or other public and private settings. This reality increases both the opportunities for and the incidence of digital nudging. Local governments can nudge residents to pay their taxes on time by highlighting social norms of tax payment or presenting the penalties for overdue payments as psychologically painful losses; charitable organizations can nudge individuals for higher donations by offering donation menus that lead people more often to select favored options or triggering emotional reactions; social media platforms can nudge individuals to follow news from media outlets those platforms deem reliable; and even private email providers may nudge their customers with a simple reminder to follow up on an email they sent five days ago that received no reply.

Of course, while digital nudging occurs online, its behavioral effects are not limited to digital environments. Offline effects may occur incidentally, because the online behaviors that people are nudged towards have offline parallels: The nudged tax payment may be done with a physical check or even in person; the emotionally-triggered donation may take place at a local charity; successfully-nudged social media consumers may subscribe to a physical edition of a favored newspaper; and even the automated email nudge may lead one to knock on a colleague’s office door to follow up in person on that answered email.

In such cases, the offline effects of digital nudging are mere byproducts of online interventions whose main goal is the shaping of online behavior. Yet digital nudges are frequently implemented specifically to change offline behavior. This is the case, for instance, with health apps or gadgets that nudge individuals to increase their physical activities; with text messages that nudge people to engage in targeted real-world health behaviors, like taking a flu vaccine; or with websites or mobile phone apps that closely resemble those physical Home Energy Reports and seek to lower consumers’ home energy use.

Digital nudges also vary in the degree to which they are uniquely digital. Some nudges are digital primarily in the sense that they operate through some digital medium, as when citizens receive a “reminder” to pay taxes on time via email or text rather than by a physical letter in the mail.

22 E.g. Hunt Allcott & Judd B. Kessler, *The Welfare Effects of Nudges: A Case Study of Energy Use Social Comparisons*, 11 *Am. Econ. J.: Applied Econ.* 236 (2019).

23 *Id.*

24 E.g. Cass R. Sunstein, *The Cost-Benefit Revolution* (2018).

25 Markus Weinmann et al., *Digital Nudging*, 58 *Bus. Inf. Syst. Eng.* 433 (2016).

26 E.g. Debbie Stone et al., *User Interface Design and Evaluation* 4 (2005).

Other behavioral interventions are more uniquely digital in that they exploit features of the digital environment that are unavailable to their offline counterparts. For example, when originally conceived as an accompaniment to physical utility bills, Home Energy Reports could only offer monthly feedback on a household's overall consumption over a previous month, while the digital version of the same reports or similar apps are capable of providing ongoing, immediate, and far more granular, energy-use or social comparison information.

The advantages of digital nudges are not limited to their potentially rapid response times or their access to current information. For one, the flexible and technologically advanced nature of common digital interfaces allow nudgers to use a wide array of visual and auditory effects to direct attention, emphasize or deemphasize information, or trigger affective or intuitive psychological reactions, in ways that are usually unavailable to offline nudges. Additionally, digital nudges can use software that benefits from machine learning, big data analytics, and more to track and evaluate individual behavior and develop more nuanced and personalized interventions, with rapid content modification as new information is obtained. Studies show, for instance, how data on Facebook “likes” can predict different personal characteristics, such as demographics or even personality traits (e.g. extraversion or openness), with some accuracy.²⁷ Such predictions, in turn, can form the basis of more effective behavioral interventions that target these characteristics.²⁸

Beyond the technological strengths of digital interfaces and the software underlying them, which may enable more effective behavioral interventions, digital environments also yield novel opportunities for nudging that do not exist offline. Online social networks (e.g. Facebook or Instagram) and other online social groups (such as gaming communities) are a familiar case on point. Such networks and communities are uniquely online fora, with no direct offline counterparts. They allow for data collection, analysis, and use in the service of behavioral policy interventions, just as they do for commercial interests (e.g. through advertising).

In one clever example of leveraging digital social interaction and technology to shape offline behavior, a Japanese COVID-19 contact-tracing mobile phone app included both a gaming element (getting a “fortune slip” when checking in at a new physical location where social interaction could take place) and a socially displayed digital art that becomes

increasingly elaborate with each additional user who is physically present.²⁹ The latter element in particular aimed at producing social recognition effects that single out app users — as well as those who do not use the app — in social settings and might further the creation of social norms that favor contact tracing.

04

DIGITAL NUDGES: PITFALLS

The same factors that render digital nudges potentially more effective policy tools, however, also bring with them attendant risks and costs. Most importantly, digital behavioral interventions can generate opportunity costs and other private costs that are similar in kind but substantially greater in magnitude than the comparable costs of offline nudges. The greater magnitude of digital nudge costs is due to a combination of factors: First, more effective interventions usually generate higher private costs (irrespective of their benefits), and those unique characteristics of digital nudges that render them potentially more effective — such as their employment of AI, big data, rapid and dynamic personalization, or engaging and multi-sensory interfaces — are especially capable of leading people to make personally detrimental behavior changes; second, the opacity of the algorithms on which digital nudging relies means that it is more difficult to determine whether they or the behavioral processes through which they change individuals' judgments and decisions are detrimental; and, third, because most digital nudging takes place on private online platforms and websites, private intermediaries and other private actors have much greater influence on the goals and characteristics of these interventions than in the case of their offline counterparts, thereby increasing the likelihood that they will harm their targets.

The potentially greater private costs of digital nudges are nicely illustrated by the Japanese contact-tracing app described above, which uses both a gaming element and social recognition effects to encourage people to download and use the app. This app could be particularly powerful because it provides individuals with a strong social recognition signal, with publicly displayed digital art becoming

27 E.g. Michal Kosinski et al., *Private Traits and Attributes are Predictable from Digital Records of Human Behavior*, 110 *PROCEED. NAT'L ACAD. SCI.* 5802 (2013).

28 E.g. Sandra C. Matz et al., *Psychological Targeting as an Effective Approach to Digital Mass Persuasion*, 114 *PROCEED. NAT'L ACAD. SCI.* 12714 (2017).

29 Yuji Kanamitsu et al., *Using Interaction as Nudge to Increase Installation Rate of COVID-19 Contact-Confirming Application*, Adjunct Proceedings of the 2021 ACM International Joint Conference on Pervasive and Ubiquitous Computing and Proceedings of the 2021 ACM International Symposium on Wearable Computers (2021).

visibly more elaborate whenever a person with an active app joins the social group. Notably, this public signal not only demonstrates to others that one is using the contact-tracing app, but also identifies those who are avoiding it by the lack of a change in the public digital art when then join others in a social setting. This powerful nudge may well pressure individuals who do not wish to surrender their privacy to nevertheless use the app to their personal detriment.

More generally, as this example demonstrates, the same tools and data that increase the potential effectiveness of digital nudging also tend to increase its private costs. The social recognition aspect of the Japanese contact-tracing app could not work without constantly tracking of its users' whereabouts, collecting, and using personal information, benefiting from rapid feedback, employing a multi-sensory interface, and so on. Yet by building upon such data and technology, this digital nudge may be particularly capable of leading individuals to accede to a contact-tracing method they would have otherwise refused.

“As this example demonstrates, the same tools and data that increase the potential effectiveness of digital nudging also tend to increase its private costs

Similar technologies and data similar can underpin digital nudges that seek to promote other public welfare goals (e.g. a reduction in household energy consumption) or individual well-being (such as a more healthful diet or an increased rate of saving for retirement). In the case of many such common interventions, therefore, digital nudges may impose substantial private opportunity costs on many and occasionally also entail private costs to third parties (e.g. the net revenue losses to energy providers or less-healthful food sellers due to diminished consumption).³⁰ As with offline nudges, these private costs may not render digital behavioral interventions altogether unappealing, but they must be weighed, together with all other policy costs, against whatever private or public benefits these nudges provide.

Beyond concerns about the private costs that follow their greater efficacy, digital nudges typically also rely on opaque algorithms that make it exceedingly difficult to determine their benefits and costs. Like other current uses of artificial intelligence (“AI”) in the commercial sphere, nudges can employ AI and machine learning (“ML”) systems to identify their targets and determine when and how to approach them. These software systems are trained on and learn from a great deal of individual-level data (e.g. online behavior) that allow algorithms to predict which outcome would optimize a set of parameters.³¹ Importantly, AI/ML systems are can act in ways that are not strictly pre-programmed and to adapt their actions to changing environments; once trained, they rely on recursive feedback to organically continue learning from new information to improve their predictions.³²

Importantly, the adaptive nature of AI/ML systems can make it particularly difficult to determine precisely why they nudged a given individual. An AI/ML system designed to encourage household energy conservation, for instance, may seek individuals whose preferences it predicts to favor energy conservation, people it predicts to consume more energy irrespective of whether their preferences favor conservation, or simply consumers whom the system estimates to be most susceptible to a particular nudge based on their personality characteristics. Yet we may not be able to ascertain for which of these reasons an individual was selected for nudging, only that the AI/ML system predicted that nudging that person will best optimize its energy conservation parameters.

This uncertainty is exacerbated by the further challenge of identifying the specific behavioral processes an algorithm recruited to cause individuals to conserve more energy. After all, even offline a single intervention may recruit multiple behavioral processes — as when the traditional Home Energy Reports included a combination of social comparison information (comparing the household to a group of “efficient neighbors”), purported injunctive social norms favoring energy conservation (with smiley faces for those who conserve more than average), and energy conservation tips.³³ Consequently, It may be unclear which specific behavioral process led to a behavior change in any given case. After all, the energy conservation nudge may have assisted some who already wished to conserve more energy than their peers to follow through (e.g. by providing a social comparison benchmark), in which case they were likely made better off. But it may have led others to reduce energy consumption for fear of violating a purported social norm

30 Avishalom Tor & Jonathan Click, *When Should Governments Invest More in Nudging? Revisiting Benartzi et al. (2017)*, REV. L. & ECON. (forthcoming 2023).

31 Karni Chagal-Feferkorn & Niva Elkin-Koren, *LEX AI: Revisiting Private Order by Design*, BERKELEY TECH. L. J. (forthcoming).

32 *Id.*

33 Tor, *supra* note 2.

(such as through smiling/unsmiling face icons) or even just because they were susceptible to the pressure of repeated reminders (e.g. of their daily energy consumption). In the latter cases, however, those who conserved more energy have been made worse off.³⁴

Beyond its tendency to produce higher private costs that may be especially difficult to identify, the great majority of digital nudging occurs on private platforms and websites, which renders private intermediaries essential to their delivery. This reality also provides these intermediaries, as well as any other private actor who uses their services, with the ability to influence or even determine the goals and characteristics of digital nudges. Furthermore, unlike the legal scrutiny and limits of governmental regulatory interventions, privately initiated or executed digital nudges are subject to few constraints, particularly in the United States.

Of special concern is the fact that private online intermediaries already possess vast troves of personal data and sophisticated tools that use this data to great effect in their commercial dealings with consumers. The same capabilities that enable Google to personalize its search results or Facebook to provide its users with a personalized feed, for instance, can be used to nudge their users towards online and offline behaviors that they or their private customers (e.g. a non-profit environmental protection organization) wish to promote. In addition, more effective, privately initiated, digital nudging that is subject to little scrutiny is all the more concerning given its ability unobtrusively to advance controversial policy goals (e.g. encouraging Covid booster shots for young children or discouraging abortion) outside established legal institutions or public political debate.

05

CONCLUSION

All in all, it is apparent that digital nudges can offer more effective means for shaping people's judgments and decisions than offline behavioral instruments. However, this greater efficacy, together with the increasing ubiquity of digital nudging, the opaque means it employs in the service of behavior change, and the key role of online platforms and other private actors in delivering or commissioning digital interventions raise significant concerns that merit further critical evaluation. While digital nudging that draws on the same capabilities that successfully advance the commercial interests of private industry is here to stay, the various costs and risks associated with it should be weighed against its benefits, and appropriate responses — legal or technological — may well be needed to address its more egregious instances. ■

“*All in all, it is apparent that digital nudges can offer more effective means for shaping people's judgments and decisions than offline behavioral instruments*”

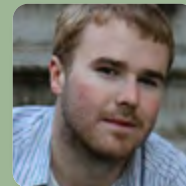
³⁴ Cf. Tor & Klick, *supra* note 30.



ONLINE CHOICE ARCHITECTURE: THE GOOD, THE BAD, AND THE COMPLICATED



BY
MICHAEL SOBOLEV



&
VEDRAN LESIC

Cornell Tech, NY, U.S. and Competition and Markets Authority, UK, respectively. These ideas were formulated while the author was teaching Behavioral Economics for Tech (BEtech) course at Cornell Tech and during his time as visiting fellow at the Digital Life Initiative (DLI). The opinions expressed in this paper are those of the author and do not reflect the opinions of CMA..

01 INTRODUCTION

Digital technology is constantly transforming how people make decisions in their daily lives.

The arrival of the iPhone had one of the biggest effects on human daily behavior. As of now, 85 percent of U.S. adults own a smartphone² and increasingly rely on these devices for communication, entertainment, and shopping. E-commerce is another transformative area as people increasingly rely on websites and mobile apps for searching and buying almost any

² Pew Research Center (2022) Mobile fact sheet, Report, Pew Research Center, Washington, DC.

type of product or service. As evidence, nearly half of the U.S. population are currently paying for Amazon's premium subscription (i.e. Amazon Prime).³ Due to the high demand, it would be reasonable to expect that these technologies improve the lives of people and make their choices easier, better, and more informed than ever before.

Choices are not happening in a vacuum. Almost every decision online is influenced by design of the user interface ("UI") and user experience ("UX"). Big tech companies employ large teams of UX designers and researchers to test and optimize these types of features for user engagement (e.g. Google, Amazon). Even seemingly small changes in the design can matter. At Microsoft, A/B testing of news headlines revealed that slightly changing the shade of colors can lead to revenue increase of \$10 million annually.⁴ Other design decisions can be more deliberate. Online shopping websites simplify buying processes to ensure the quickest possible conversion for each consumer with Amazon's one-click checkout as one of the best examples. Ranking, reviews, and recommendations are only a partial list of interface design aimed at influencing choices in predictable ways. In behavioral economics, we call these sets of design features *choice architecture*.⁵

Choice architecture broadly refers to the way choices are set up and the context in which people make decisions.⁶ Common tools of choice architecture⁷ include setting up a default option, ranking of products and framing information.⁸ For example, in a traditional 'brick and mortar' environment, the way options are arranged, what is displayed more prominently and how consumers are interacting with other shoppers and staff, will affect what they might purchase that day. In an online context, choice architecture is the environment in which users or consumers make decisions, including the display and arrangement of choices and the design of interfaces. We call this set of digital design features *Online Choice Architecture* ("OCA"). OCA is a neutral term and depending

on how the choice architect (also called designer)⁹ applies it will determine the direction of its impact.

In this paper, we describe OCA design, analyze applications of OCA for good and for bad, and discuss future direction for research and practice of OCA. We build on multidisciplinary research ranging from behavioral economics to human-computer interaction. Since the publication of the book *Nudge*,¹⁰ academic research and behavioral science practitioners have generated a large number of studies, randomized controlled trials, and papers on the positive effects of offline and online choice architecture and nudges. In online setting, research on effectiveness, prevalence, and negative effects of OCA (and closely linked dark patterns)¹¹ is getting more and more attention, especially in consumer organization and competition authorities, and the media. Our aim is to further advance the discussion on the complicated effects of OCA on human behavior and discuss implications for design.

02 ONLINE CHOICE ARCHITECTURE

Choice architecture is everywhere, and it is unavoidable. Elements of choice architecture are integrated in every product or service people use as part of daily life. E-commerce websites include product reference pricing, online reviews and ranking of products among other OCA practices. Mobile devices and apps send people what seems like an unlimited number of notifications daily. Social media includes automatically generated feeds of posts and news, setting almost no limit on the amount of content people can con-

3 Amazon's 2022 Letter to Shareholders: <https://www.aboutamazon.com/news/company-news/2020-letter-to-shareholders>.

4 Kohavi, R. & Thomke, S. (2017). The surprising power of online experiments. *Harvard business review*, 95(5), 74-82.

5 The term *choice architecture* was coined in the book *Nudge*. See for more details: Thaler, R. H., & Sunstein, C. R. (2009). *Nudge: Improving decisions about health, wealth, and happiness*. Yale University Press.

6 Johnson, E. J. (2022). *The Elements of Choice: Why the Way We Decide Matters*. Simon and Schuster.

7 Johnson, E. J., Shu, S. B., Dellaert, B. G., Fox, C., Goldstein, D. G., Häubl, G. & Weber, E. U. (2012). Beyond nudges: Tools of a choice architecture. *Marketing letters*, 23(2), 487-504.

8 Szaszi, B., Palinkas, A., Palfi, B., Szollosi, A. & Aczel, B. (2018). A Systematic Scoping Review of the Choice Architecture Movement: Toward Understanding When and Why Nudges Work. *Journal of Behavioral Decision Making*, 31(3), 355-366. <https://doi.org/10.1002/bdm.2035>.

9 In the remainder of the paper we use "choice architect" and "designer" mostly interchangeability, unless noted otherwise.

10 Thaler, R. H., & Sunstein, C. R. (2008). *Nudge: Improving decisions about health, wealth, and happiness*. Yale University Press.

11 This paper uses a broad definition of OCA to enable discussion of a wider set of practices across a range of contexts, including dark patterns, dark nudges and sludge. Dark patterns often come as a combination of multiple OCA practices (e.g. confirmshaming is a combination between framing, defaults and visual manipulation).

sume. OCA practices evolved from understanding of human behavior and are designed to influence behavior in a predictable way, and as such, can be equally used for good or bad. What is the impact of OCA practices on consumer and user welfare? The answer is often complicated. In *Table 1*, we provide a few examples of good and bad applications of OCA, which we discuss later in the paper.

Table 1: Examples of Good and Bad Online Choice Architecture

Choice Architecture	Good example	Bad example
<i>Defaults</i>	Setting preferred information to reduce friction in online shopping (i.e. one-click)	Default option for the least amount of privacy
<i>Prompts and Reminders</i>	Reminders to pay bills in time and digital calendars	Nagging push notifications to increase engagement with product
<i>Ranking and Recommendations</i>	Ranking products based on explicit user preferences	Paid or promoted ranking that ignores product quality and user preferences

Note: This table does not provide an exhaustive set of OCA categories. The examples in the table are just illustrative examples and each application of OCA has to be analyzed in detail for positive and negative effects on behavior.

In the digital environment, the products and services people buy or download are full of pre-specified defaults. For example, Apple’s iPhone devices and Microsoft’s Windows operating system come with a set of pre-installed apps, often developed by the same entity. One example of digital default that impacted global markets¹² is the case of Google search engine. Due to the pre-selected default, most users may not even be aware of the option to change search engines, there-

by limiting their autonomy. However, when prompted with an active choice screen, an overwhelming majority of users still stick with Google as their search engine¹³. Depending on the perspective, the overall effect on consumer and user welfare (and market competition) could be either positive or negative. As a result, this case was a subject of investigation by different competition and consumer authorities around the world.¹⁴ In other cases, strong preferences might be able to override defaults. For example, despite the efforts of Microsoft to establish their default internet browser on all Windows devices,¹⁵ the majority of users deviate from default and actively download and use an alternative browser, as evident by market share of the Chrome browser.¹⁶ A similar case involves the conscious effort by iPhone users to download and use Google maps app as opposed to the default Apple maps app that is pre-installed on all Apple devices. In online settings, defaults can be challenging to design, because often it might be hard to find a default option that works for everyone and forcing users to actively choose between two or more options can lead to undesired friction.

“In the digital environment, the products and services people buy or download are full of pre-specified defaults

Another interesting example of OCA is Amazon’s invention of the one-click ordering button. This feature allows users to set default shipping and payment information that can be used in every future purchase. Amazon patented this idea in 1999 and the recent expiration of patent allowed other payment platforms to adapt similar technology.¹⁷ The wide adoption among shopping platforms suggests a benefit for businesses and also demand from their users to allow this feature. For users, one-click shopping significantly reduces friction which, in turn, leads to better conversion rates for

12 CMA. (2020). Online Platforms and Digital Advertising Market Study. Appendix H: Default Positions in Search. Retrieved from: https://assets.publishing.service.gov.uk/media/5fe4956ad3bf7f089e48deca/Appendix_H_-_search_defaults_v.6_WEB.pdf.

13 Decarolis, F., Li, M., & Paternollo, F. (2022) Competition and Defaults in Online Search. *Working Paper*.

14 CMA. (2020). Online Platforms and Digital Advertising Market Study. Appendix X: assessment of pro-competition interventions to enable consumer choice over personalised advertising. Retrieved from: https://assets.publishing.service.gov.uk/media/5fe36a658fa8f56af0ac66f2/Appendix_X_-_assessment_of_pro-competition_interventions_to_enable_consumer_choice_over_personalised_advertising_1.7.20.pdf

European Commission (EC). (2003). CASE AT.40099 Google Android. Retrieved from: https://ec.europa.eu/competition/antitrust/cases/dec_docs/40099/40099_9993_3.pdf.

15 *United States v. Microsoft Corp.*, 253 F.3d 34 (D.C. Cir. 2001).

16 Statista: Global market share held by leading desktop internet browsers from January 2015 to August 2022 <https://www.statista.com/statistics/544400/market-share-of-internet-browsers-desktop/>.

17 Wells, J. R., Danskin, G. & Ellsworth, G. (2018). Amazon. com, 2018. *Harvard Business School Case Study*, (716-402).

businesses. Yet, in the online setting, when users make fast decisions, reduction in friction can also lead users to consume more and buy products they do not really need.¹⁸ In those cases, adding friction as part of the OCA might actually help users pause and reflect on their decisions and reduce the negative side effect of seamless online shopping experience. This might be especially true in online banking, where introducing friction by increasing the number of decision points before a certain financial transaction, has proven beneficial for consumers.¹⁹

The examples above emphasize the susceptibility of users to OCA practices. Due to the adoption of digital technology, the online setting is bringing a new set of features that create opportunities for designers of choice architecture. Design of good OCA can provide substantial benefits for users. These benefits include more seamless user experience, easier comparisons between products and greater transparency. To further tailor products and services, designers leverage user preferences and behavior to personalize every step of user experience. In some digital environments, users also have the ability to customize the product or service they use for maximum utility. Unfortunately, the move to digital environments also opened the door for bad design of OCA and negative effects on human behavior. Users online have the tendency to have shorter attention spans and trust information provided by others (e.g. online reviews).²⁰ Bad design of OCA, by setting a problematic privacy default for example, may pose a substantial risk for consumer and user welfare.

What is the process of OCA design? As a first step, designers can leverage existing frameworks that build on research in behavioral science to design an effective choice architecture (for example MINDSPACE²¹ or EAST).²² The EAST framework, for example, urges designers to apply behavioral insights by making behavior easy, attractive, social, and timely. The second step involves optimization. Optimization often involves iterative design based on user feedback and

data-driven A/B testing. A/B testing detects the behavior of real users accessing different versions of a website or an app to identify the most effective version.²³ Recently, A/B testing is becoming more popular across various platforms and websites, with some conducting more than a thousand A/B tests every single day. For example, New York Times A/B tests which headline creates the most engagement and Netflix uses the same approach to personalize the thumbnail of shows for each individual user.²⁴ In fact, optimization of OCA usually never stops with A/B tests taking a crucial part in the continuous evaluation of digital products and services.

03

OCA FOR GOOD

As a general assumption, technology is invented to solve problems and improve human life. Some technologies directly target choice behavior, with invention and widespread adoption of GPS as the best example to date. If they even remember a life without it, most individuals would agree that GPS made life much easier and better, by reducing the cognitive load of navigation while driving. Choice engines, like Expedia, which allowed consumers to quickly search and book flights and hotels, are another example of a digital environment which transformed markets.²⁵ Modern digital platforms were originally designed with a similar purpose. Google was designed to streamline access to information, Amazon was designed to expand access and alternatives for shopping, and UBER was designed to reduce friction in transportation. Again, as in the case of GPS, most people would agree that access to Google, Amazon, Expedia, and UBER made their life better. This promise of such technologies for improving choice behavior was one of the main

18 Paay, J. & Rogers, Y. (2019). The Dark Side of Interaction Design. Proceedings of the 31st Australian Conference on Human-Computer-Interaction, 2–2. <https://doi.org/10.1145/3369457.3369547>.

19 Pausing, reading, and reflecting: decision points in high-risk investment consumer journeys <https://www.fca.org.uk/publication/research/decision-points-consumer-journeys.pdf>.

20 Benartzi, S. & Lehrer, J. (2015). The Smarter Screen: What Your Business Can Learn from the Way Consumers Think Online. Hachette UK.

21 Dolan, P., Hallsworth, M., Halpern, D., King, D., Metcalfe, R. & Vlaev, I. (2012). Influencing behaviour: The mindspace way. *Journal of economic psychology*, 33(1), 264-277.

22 EAST: Four Simple Ways to Apply Behavioural Insights: <https://www.bi.team/publications/east-four-simple-ways-to-apply-behavioural-insights/>.

23 Kohavi, R. & Thomke, S. (2017). The surprising power of online experiments. *Harvard business review*, 95(5), 74-82.

24 Gomez-Uribe, C. A., & Hunt, N. (2015). The netflix recommender system: Algorithms, business value, and innovation. *ACM Transactions on Management Information Systems (TMIS)*, 6(4), 1-19.

25 Thaler, R. H., & Tucker, W. (2013). Smarter information, smarter consumers. *Harvard Business Review*, 91(1), 44-54.

premises of the book *Nudge*²⁶ and the foundation for the idea of choice architecture.

Digital environment expands the set of features that designers can easily control as part of OCA. As discussed earlier, UI/UX designers play a major role in creating OCA as part of interface design. Good principles of UI/UX design are often analogous to good design of OCA, but not always. For example, good principles of interaction design²⁷ recommend to: (1) present feedback to the user as quickly as possible (prompts and reminders), (2) show a clear way to exit the current interaction (e.g. cancel button), (3) help reduce user mistakes by providing helpful constraints and good defaults, (4) prioritize the content and features to support primary goals (simplification and reducing friction), (5) allow users to make selections about how they want the product to work. These principles of UI were formulated to allow users get the most utility from products, even when they are thinking and acting fast online.²⁸ As discussed earlier, there could be a tension between seamless and frictionless UI design and consumer welfare, as in the case of one-click shopping and mobile banking.

One of the most common practices of good OCA is personalization - tailoring of a service or a product to accommodate a specific individual. By using data shared by users, personalization aims to tailor each step of an interaction with a product or a service, often increasing user engagement and satisfaction. It is not surprising to observe nowadays personalization techniques implemented in nearly every digital product, and across almost every business sector. A more intelligent way of personalization involves recommender systems, an example of technology designed to simplify choice by learning from user preferences and past behavior. At the simplest level, recommender systems allow personalized ranking of options, thereby reducing search cost and choice overload, and helping people easily choose which movie to watch, what news article to read, and what song to listen to. These types of

technologies were cited as a major contributor to the success of companies like Amazon, Spotify, and Netflix.²⁹

An additional trend, powered by digital technologies, is users' ability and motivation to use OCA features to support behavior in their daily life. In behavioral science, these types of actions are called self-nudging.³⁰ One of the most classical and common tools of the "self-nudger" is setting reminders to deal with inertia, procrastination, and forgetfulness. Examples include reminders to pay bills on time, take medications daily, etc. Digital calendars and reminder apps further facilitate self-nudging, by allowing users to set even more timely reminders.³¹ Self-nudging can also help people overcome the addictive design of smartphones and social media, for example by setting limits on app usage or manipulating the interface to be less attractive.³² Unfortunately, as in the case of social media, efforts by users to deal with highly engaging OCA design might not be sufficient to prevent negative effects.

04 OCA FOR BAD

Digital environments may amplify the potential benefits of choice architecture for users but can also amplify the potential harms. UK's Competition and Market Authority ("CMA") recent publication on OCA is the most comprehensive guide on potentially harmful OCA practices.³³ According to the report, bad OCA design can directly harm consumers by distorting their choices.³⁴ Consumers might overspend, choose an inferior option, or feel pressured to buy unwanted products. These suboptimal choices can be attributed to bad OCA design such as default options that

26 Thaler, R. H., & Sunstein, C. R. (2008). *Nudge: Improving decisions about health, wealth, and happiness*. Yale University Press.

27 For more details check Nielsen's 10 Usability Heuristics for User Interface Design: <https://www.nngroup.com/articles/ten-usability-heuristics/>.

28 Kahneman, D. (2011). *Thinking, fast and slow*. Macmillan.

29 Gomez-Uribe, C. A. & Hunt, N. (2015). The netflix recommender system: Algorithms, business value, and innovation. *ACM Transactions on Management Information Systems (TMIS)*, 6(4), 1-19.

30 Reijula, S. & Hertwig, R. (2022). Self-nudging and the citizen choice architect. *Behavioural Public Policy*, 6(1), 119-149.

31 Sobolev, M. (2021). Digital nudging: using technology to nudge for good. Available at SSRN 3889831. <http://dx.doi.org/10.2139/ssrn.3889831>.

32 Zimmermann, L. & Sobolev, M. Digital Nudges for Screen Time Reduction: A Randomized Control Trial with Performance and Wellbeing Outcomes. (2020) <https://doi.org/10.31234/osf.io/nmgdz>.

33 CMA (2022). Evidence Review of Online Choice Architecture and Consumer and Competition Harm. Retrieved from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1069423/OCA_Evidence_Review_Paper_14.4.22.pdf.

34 CMA (2022) Online Choice Architecture - How digital design can harm competition and consumers. Retrieved from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1066524/Online_choice_architecture_discussion_paper.pdf.

would offer the least amount of privacy for users, excessive use of prompts and reminders (e.g. nagging push notifications), and adding unjustified friction (also called sludge)³⁵ to make the cancellation of service harder to initiate and complete. The example of default privacy settings for mobile apps and social media gained a particular attention in the media, inspired extensive academic research,³⁶ and led to adoption of new policy and regulations. As discussed earlier, finding the default that works for everyone or personalizing selection of default options for each individual are hard.³⁷ As evident from the privacy default example, setting a default that would harm most users while benefiting businesses, could be much easier.

Recent research in human-computer interaction measured the prevalence of bad OCA practices and dark patterns using a variety of methods. Presentation of information can be easily manipulated (or framed) to nudge a specific choice. Using automatic text-analysis, a study of more than 11,000 popular shopping websites detected dark patterns in more than 11 percent of those sites.³⁸ The three most common practices of bad OCA design in those sites were presenting information about scarcity (e.g. “limited quantities are available”), urgency (e.g. “discount will expire soon”), and social proof (e.g. “many people already purchased this item”). Mobile apps are also often designed with bad OCA practices. A study of Google Play Store apps within the first 10 minutes of usage discovered that 95 percent of them contain at least one or more dark patterns.³⁹ These mobile apps used the design of ranking, defaults, and prompts to influence choice, potentially against the intent of users. A comparison between three different modalities (e.g. mobile app, mobile browser, and web browser) to detect the variations between different OCA practices found that while services can employ some dark patterns equally across modalities, many dark patterns vary between platforms.⁴⁰ This work highlights the scale and direction when it comes to looking for bad OCA design.

Detecting bad OCA practices is a complicated task. Many bad OCA practices are bundled together or presented for each user differently. Furthermore, some users may be more

susceptible to OCA practices and vulnerable to harm due to personal characteristics (such as age, health, or wealth) or being in specific contexts (such as under time pressure or great distress due to some major life events). Even good OCA design, that works for the majority of users, most likely would not be able to address issues for their most vulnerable users. Similarly, we expect that bad OCA design would harm the most vulnerable users even more.

05

DISCUSSION AND FUTURE DIRECTIONS

The positive and negative effects of OCA on human behavior are often complicated and missed. As we are unpacking the unavoidable impact of OCA in the digital environment, there is a growing awareness of the prevalence of the positive and negative aspects of OCA. Even good design can have unexpected side effects, and if these side effects are not measured, they will be overlooked. Consider the example of user engagement. If designers consider only one outcome in process of A/B testing, such as conversation rates, they might ignore the effect of the number of people leaving the page and inadvertently create dark patterns.⁴¹ For some elements of choice architecture, such as recommender systems, it could be difficult to untangle the positive and the negative due to the tradeoff between “good” personalization of content and “bad” engagement (e.g. Facebook’s newsfeed). A more comprehensive measurement of user outcomes is needed to understand the effects of OCA practices and inform future design.

Data drives the design of OCA. As discussed in this paper, the process of optimizing OCA involves collecting data on user preferences and behavior. A/B testing would not be

35 Thaler, R. H. (2018). Nudge, not sludge. *Science*, 361(6401), 431-431.

36 Acquisti, A., Brandimarte, L. & Loewenstein, G. (2015). Privacy and human behavior in the age of information. *Science*, 347(6221), 509-514.

37 Mills, S. (2022). Personalized nudging. *Behavioural Public Policy*, 6(1), 150-159.

38 Mathur, A., Acar, G., Friedman, M. J., Lucherini, E., Mayer, J., Chetty, M. & Narayanan, A. (2019). Dark Patterns at Scale: Findings from a Crawl of 11k Shopping Websites. *Proceedings of the ACM on Human-Computer Interaction*, 3(CSCW), 1-32. <https://doi.org/10.1145/3359183>.

39 di Geronimo, L., Braz, L., Fregnan, E., Palomba, F. & Bacchelli, A. (2020, April 21). UI Dark Patterns and Where to Find Them. *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*. <https://doi.org/10.1145/3313831.3376600>.

40 Gunawan, J., Pradeep, A., Choffnes, D., Hartzog, W. & Wilson, C. (2021). A Comparative Study of Dark Patterns Across Web and Mobile Modalities. *216 Proceedings of the ACM on Human-Computer Interaction*, 5(CSCW2), 1-29. <https://doi.org/10.1145/3479521>.

41 Narayanan, A., Mathur, A., Chetty, M. & Kshirsagar, M. (2020). Dark Patterns: Past, Present, and Future: The evolution of tricky user interfaces. *Queue*, 18(2), 67-92.

possible without the ability to measure user behavior directly with digital data. The move to digital choice environments enabled collection of a massive amount of digital traces of human behavior. Amazon has exponentially more data points on each consumer than a typical brick and mortar store. For good or bad, this shift enables more personalized, adaptive, and autonomous design of choice architecture⁴² and digital nudging.⁴³ The use of data in choice architecture design can also bring direct conflict for users, such as the tradeoff between sharing personal data by users and the ability to personalize recommendations and advertising by platforms. The interplay between data, algorithms and OCA design will play a crucial role in future research and policy discussions.

Everyone could be a choice architect. Whether the design of OCA is intentional or unintentional, it will still have an impact on human decision-making. Choice architects are not necessarily only behavioral scientists and UX/UI designers, but they rather cover a wide range of professionals who participate in the design process. Anyone who is actively thinking about users, marketing, product, and prices participate and influence the eventual design of OCA. In fact, just by setting goals and targets, senior executives and managers also play a crucial role in the process. Because OCA practices are often placed on a particular spectrum (e.g. amount of friction), addressing OCA in a meaningful way would require unraveling which direction on a given spectrum the choice architect needs to move towards. For instance, in a shopping context, should websites add more friction and make users reflect before they buy an item or remove friction and help users make quicker decisions and risk buyers' remorse? This would mean having a bigger picture discussion among all the different types of choice architects within the businesses and other stakeholders to ensure benefits are fully utilized as well as harms are prevented.

User awareness cannot solve the problems of OCA. OCA is often well-embedded and subtle in the digital design of user interfaces, which means that users might not be aware that they are being nudged at all.⁴⁴ Even if users were to be informed that they are being nudged, the effectiveness of OCA practices may not be diminished. For example, users who received a verbal disclosure about the presence of a

nudge (e.g. defaults and framing) did not impact their decision-making but rather made them believe that others were more influenced by the OCA than themselves (e.g. overconfident in their judgment).⁴⁵ Furthermore, there is evidence that proactive transparency may actually increase the effectiveness of OCA by decreasing users' perception of being deceived.⁴⁶ This poses a challenge that users might not be best equipped to protect themselves from the harmful OCA, thereby requiring a different approach for remedies.

OCA design can have market implications. Going forward, OCA might not only bring good and bad to the users, it might also impact the businesses and their competition, as well as the digital markets overall. For example, UK's Competition and Market Authority (CMA) report⁴⁷ outlined that harmful OCA practices can weaken or distort competitive pressures. For example, businesses might start competing on less beneficial features of the product, such as salience, instead of actual quality and price. This might lead to less investment into innovation that would not benefit users in the long-term. Businesses may also use OCA to maintain, leverage and exploit market power by making it harder to leave their digital ecosystems, nudging consumers to use their own products. Therefore, devising policy and remedies for harmful OCA design, might require an approach that goes beyond OCA at the user level and looks at structural changes across the market. ■

“**Everyone could be a choice architect. Whether the design of OCA is intentional or unintentional, it will still have an impact on human decision-making**”

42 Mills, S. & Sætra, H. S. (2022). The autonomous choice architect. *AI & SOCIETY*, 1-13.

43 Sobolev, M. (2021). Digital nudging: using technology to nudge for good. Available at SSRN 3889831. <http://dx.doi.org/10.2139/ssrn.3889831>.

44 di Geronimo, L., Braz, L., Fregnan, E., Palomba, F. & Bacchelli, A. (2020, April 21). UI Dark Patterns and Where to Find Them. Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems. <https://doi.org/10.1145/3313831.3376600>.

45 Bang, H. M., Shu, S. B. & Weber, E. U. (2020). The role of perceived effectiveness on the acceptability of choice architecture. *Behavioural Public Policy*, 4(1), 50-70.

46 Paunov, Y., Wänke, M. & Vogel, T. (2019). Transparency effects on policy compliance: disclosing how defaults work can enhance their effectiveness. *Behavioural Public Policy*, 3(02), 187-208. <https://doi.org/10.1017/bpp.2018.40>.

47 CMA (2022) Online Choice Architecture - How digital design can harm competition and consumers. Retrieved from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1066524/Online_choice_architecture_discussion_paper.pdf.



A GENERAL CRITIQUE OF POTENTIAL “BEHAVIORAL ECONOMICS” RATIONALES FOR REGULATING BIG TECH: AND SPECIFIC POSSIBILITIES



BY
TIMOTHY BRENNAN

Professor Emeritus, School of Public Policy, University of Maryland, Baltimore County, Baltimore, MD, USA. Email: brennan@umbc.edu.

01 INTRODUCTION

Across the globe, many see the “big tech” sector of the economy as a bad actor. Much of that criticism is expressed in terms of insufficient competition in platform markets allegedly dominated by a handful of familiar names

— Amazon, Google, Facebook, and Apple. In some of these sectors, one-sided network externalities — people want to use a common service — can lead to most users signing up for the same service, Facebook being a leading example. In others, multi-sided externalities, where for example buyers want to be where most sellers are and sellers want to be where most buyers are, can lead to single platforms, Amazon being the leading example. These externalities need not be exclusive or exhaustive; Google as a search engine built on feedback

from user links and as a platform for selling advertising has aspects of both. And some firms, Apple for example, may face high level competition in markets for mobile devices yet stand accused of maintaining monopolies over services within their ambit, for example, requiring application developers to use Apple's App Store with Apple getting a fixed percentage of revenues from any in-app purchases.

Competitive considerations fall well within standard economic frameworks, which may explain in part why big tech critics choose to express their concerns as antitrust violations. However, alternate frameworks may suggest other rationales for policy interventions into the conduct of these and other firms in the "big tech" arena. One such potential framework, motivating this symposium, is behavioral economics.

I have some suggestions where insights drawn from or related to behavioral economics may be relevant to present policy concerns. I need to begin, however, with something of a disclaimer — I am skeptical of the usefulness of behavioral economics for policy, or for economics for that matter. After briefly discussion some of the sources of that skepticism, I nevertheless find some potential justifications for "big tech" regulation from these insights. Three I focus on here are (1) the realization that thinking can be costly, (2) the possibility that people may not act according to their "true" preferences, and (3) the effect of present actions on the creation of future preferences. Identifying potential insights does not imply identification of effective regulatory or other types of policies to address them. This may be most true for the effect of social networks on social fragmentation, which is perhaps of the deepest concern and, in my view, has little if anything to do with behavioral economic considerations.

02

SETTING THE CONTEXT: BEHAVIORAL ECONOMICS' LIMITATIONS

Behavioral economics or ideas related to it may offer useful perspectives on big tech regulation. Those perspectives may be useful without having to accept behavioral economics as a generally useful contribution to policy or to economics. I am skeptical for a number of reasons.²

A first is that behavioral economics conflicts with the requirements of benefit cost analysis ("BCA"). While BCA, right or wrong, generally has played only a relatively minor part in competition law, it is central to regulation, at least in the U.S.³ BCA requires monetary measures of how much the benefits are worth to people and the burden of any costs. Ascertaining these values requires that (1) the benefits and burdens are measured by peoples' willingness to pay or those benefits or to avoid those burdens, and (2) that such willingness to pay is revealed by actual willingness to pay from markets or surrogates.⁴ Behavioral economics breaks both links in this chain, by claiming that because of cognitive biases, willingness to pay differs from the "true" value to persons, or that revealed willingness to pay differs from actual willingness to pay. That may be correct, but if so, BCA is left without empirical foundation.⁵

Considering alternatives to BCA points out another troubling implication of behavioral economics — who gets to make these decisions? An attractive feature of BCA and economics in general is that decisions are based on what people want, rather than what any individual in power wants. There are ways to reconcile behavioral economics with having decisions to a particular person, which might be called rational delegation, that is, people deciding that they would rather leave certain decisions affecting their lives to the expert, which they choose. (I will return to this below.)

2 Many of the points below are argued in more detail in Timothy Brennan, "Behavioral Economics and Policy Evaluation," 5 *Journal of Benefit-Cost Analysis* 89 (2014), Timothy Brennan, "Behavioral Economics and Energy-Efficiency Regulation," 59 *Network* 1 (2016), and Timothy Brennan, "The Rise of Behavioral Economics in Regulatory Policy: Rational Choice or Cognitive Limitation?" 25 *International Journal of the Economics of Business* 97 (2018).

3 Office of Management and Budget, Executive Office of the President, Circular A-4, Regulatory Analysis, 58366 *Federal Register* / Vol. 68, No. 196 / Thursday, October 9, 2003 /, following bipartisan Executive Orders requiring the use of benefit cost analysis in regulatory assessment. Dudley et al., "Consumer's Guide to Regulatory Impact Analysis: Ten Tips for Being an Informed Policymaker" 8 *Journal of Benefit Cost Analysis* 187 (2017).

4 Carrying out the second step is often difficult. As regulation is designed to correct the failure of markets to reflect certain values, such as the willingness of people to pay for a cleaner environment or safer highways, indirect methods for measuring willingness to pay outside market prices are typically required.

5 Cass Sunstein, "Cognition and Cost-Benefit Analysis," 29 *Journal of Legal Studies* 1059 (2000), argued that behavioral economics and BCA can be reconciled, but that argument was only that persons' errors justify substituting government decisions for their own. He did not show what data would be used to justify those decisions in place of market data based on putatively erroneous decisions.

That may work, although if people's decisions are biased regarding outcomes, might they be biased regarding delegation as well? It is too short a distance from claiming that persons' decisions are biased to the view that I (or whoever) am uniquely free of bias and thus should get to make the decisions.

To be honest, though, my most strongly felt objection to behavioral economics is that it is a form of “throwing in the towel” and giving up, in an intellectual sense. If someone does something we do not understand, we need not try to explain it — we need only assert a bias.⁶ Had that been the standard recourse over the decades, we might not have come up with economic analysis of incomplete markets, asymmetric information, strategic decision making, and other ideas that moved economics beyond the basics in introductory courses.

However, thinking about the questions posed by behavioral economics does lead to some possible rationales for big tech regulation that lie outside that conventional economics box.

03

THINKING MAY BE COSTLY: DELEGATING CHOICES

The lesson from behavioral economics most complementary to standard economics is that thinking may be costly. We already understand without the need for explanation that physical activity can be costly. We have elevators so we do not have to take the stairs; we have cars, so we do not have to walk. Similarly, we develop generally reliable “rules of thumb” to avoid having to think through all possible consequences, for example, inferring from how choices are usually presented what the preferable option is likely to be.

Many of the leading experimental findings supporting behavioral economics could be interpreted as fooling subjects through unexpected framing. It may be reasonable to expect that the default option is the one most people like,

therefore that people are likely to choose it if figuring out pros and cons is costly. In response to unexpected framing, such as randomly assigning the default option to particular choice — opt-in or opt-out of an employer-subsidized pension⁷ — it should not be surprising that people choose the default rather than what they might prefer, if determining the preferred choice require costly thought. This kind of result is no more paradoxical than an experiment watching people stand in front of an elevator they do not know is not working, for more time than it would have taken to use the stairs.

If thinking is costly, it is not hard to imagine that there may be economies of scale in studying a situation to determine the best outcome. Markets can and do respond to this, for example, buyers relying on a store to evaluate quality on the goods on their shelves so they do not have to.⁸ However, if the scale economies are large enough or there are adverse selection problems with intermediaries conveying their expertise to buyers, there may be room for the government to be do this thinking. Such a rationale lies at the heart of consumer protection regulation, recognizing the possibility that sellers may mislead consumers by how they structure choices just as they may mislead consumers by what information they do or do not provide.

This conception has obvious application to big tech regulation. If privacy or data disclosure policies are too difficult to think through, the government can establish default rules for them. This is not unprecedented; uniform commercial codes, landlord/tenant contracts, and other settings follow general rules and are not left for all parties to think through all implications. Arguably, the foundation of the economic approach to contract law — that contracts may be incomplete and thus require judicial interpretation — itself is a manifestation of thinking being costly.

There are two qualifications. A first is that policy makers with the authority to set privacy and data disclosure rules need to understand the benefits to users and the economy as a whole from obtaining and offering access to user information and the costs of enforcing disclosure policies.⁹ A second is that to the extent that people have different relevant preferences — some care more about privacy than others — such regulation should perhaps be designed with opt-out provisions so those willing to think through the pros and cons to them can choose a different regime. In general, the more divergent are user preferences in any context, the less likely that a uniform default rule will be appropriate

6 Violating my general request to students that they not cite Wikipedia, Wikipedia lists (if I counted correctly) 88 cognitive biases in 13 categories, with another 37 classified as “Other.” Wikipedia, List of Cognitive Biases, https://en.wikipedia.org/wiki/List_of_cognitive_biases, accessed 16 September 2022.

7 Shlomo Benartzi & Richard Thaler, “Heuristics and Biases in Retirement Savings Behavior,” 21 *Journal of Economic Perspectives* 81 (Summer, 2007).

8 This consideration could support some contentious big tech activities, e.g. smartphone users preferring Apple because it insists that only apps it approves can be made available for iPhones.

9 Michal Gal & Oshrit Aviv, “The Competitive Effects of the GDPR,” 16 *Journal of Competition Law & Economics* 349 (2020).

A second tech regulation policy issue to which the cost of thinking is relevant is quality control and content moderation. If users of a service would prefer that the information they see is accurate, they may prefer having the content provider ensure accuracy rather than expend the effort to do so themselves. This suggests that policy makers may impose costs on users if they prevent content providers, even large ones, from suspending the accounts of purveyors of falsehoods.

04

WEAKNESS OF WILL: LIMITING OPTIONS

A second conception of behavioral economics is that people make mistakes in the pursuit of their own ends. The hard part is distinguishing mistakes from preferences that an outside observer may not understand. For economics-based regulation, as in typical merger assessment, one should take revealed preferences as real, e.g. if people regard X and Y as different even if “rationally” they should be regarded as close substitutes, then X and Y are not in the same market.¹⁰ Some other regulatory avenues can attempt to inform consumers of the possibility of a mistake. But if after being informed consumers continue to do the “irrational” thing, treat it as a preference.

A more compelling idea that goes outside the standard economics box is the notion that people may not want to act in accord with their predicted future preference. To do so, they “precommit” to limit their future options. The archetypal precommitment story is Ulysses binding himself to the mast to prevent his being lured by the Sirens.¹¹ A less dramatic example would be paying in advance for a gym membership, rather than paying for each visit, to reduce the cost of going and make it more likely that one will exercise.¹² “Weakness of will” can be thought of as wishing one could precommit to a course of action that one knows or suspects one will not take when that time to act comes about.

Precommitment raises questions beyond standard economics because its tools cannot determine whether the preferences at the time of precommitment or the preferences when the precommit would limit choices. Consider X, who shares an apartment with Y. X wants to lose weight, so tells Y to lock the refrigerator after X eats a salad for dinner, so X will not be tempted to snack on ice cream at midnight. Midnight comes, and X asks Y for the key. From an efficiency standpoint (assuming Y is indifferent about X’s weight), why shouldn’t Y give X the key? Economics alone cannot tell us whether X’s dinner time preferences, or midnight preferences, should be controlling.

Precommitment plays a role in public policy and could rationalize some aspects of big tech regulation. One can view drug laws as means not for me to prevent you from taking harmful drugs, but as means to prevent *me* from taking them.¹³ One could imagine regulations as precommitment methods to address concerns that using big tech devices or applications can be addictive. While one hears concerns along these lines,¹⁴ it is admittedly not any clearer how to do that than it would have been to get people (me, that is) to spend less time watching television, in the days before the Internet and smartphones.

05

PREFERENCE FORMATION: WHO WILL WE BE?

Standard economics takes preferences as given. However, they have to come from somewhere. One can go past behavioral economics and more overtly into psychology to consider the empirical determinants of preference formation — essentially, who we are. This too is not new to big tech. Part of the purpose of public education is to inculcate dispositions to civic norms. One can view support for the arts not just as a way to deliver certain cultural goods to those willing to pay for them, but as a way to influence what we will want and expect of society in the future.¹⁵

10 Timothy Brennan, “Behavioral Economics and Merger Enforcement: A Speculative Guide,” 9 Threshold: American Bar Association Mergers and Acquisitions Committee 21 (No. 2, 2009).

11 Jon Elster, *Ulysses and the Sirens: Studies in Rationality and Irrationality* (1979) is perhaps the leading discussion of precommitment in the social sciences literature, and surely the most engaging.

12 Jon Elster, “Weakness of Will and the Free-Rider Problem,” 1 *Economics and Philosophy* 231 (1985).

13 Elster uses the term “self-paternalism.”

14 See, for example, Sehar Shoukat, “Cell phone addiction and psychological and physiological health in adolescents,” 18 *EXCLI J.* 47 (2019).

15 This argument is touched on in Timothy Brennan, “The Trouble with Norms,” in Koford, Kenneth & Jeffrey Miller (eds.), *Social Norms and Economic Institutions* 85 (1991).

It is outside my expertise to know how the pervasiveness of big tech enterprises today will influence the culture and people of the future. But it is hard to imagine that there will be no effect. That said, I have no idea whether one should or even how one could usefully regulate big tech to move society in some particular direction. The intensity of continuing culture wars at all levels of education, from public school boards and libraries to university classrooms and faculty gatherings, illustrates just how controversial preference formation policy can be, even before we know how preferences get formed.

Many do not like this, but it is not clear what if anything can be done about it, other than *ex post* law enforcement. Social media are here to stay. Perhaps bans on false information and its purveyors would help, but that is both an enforcement nightmare and, at least in the U.S., likely to run afoul of constitutional protections of free speech. Competition considerations, abetted by considerations relating to costs to users of thinking through privacy, data security, and information veracity, may be useful. But the most serious problems in this regard are likely to remain impervious to big tech regulation. ■

06

FRAGMENTATION AND POLARIZATION: NOT NEW, BUT WHAT TO DO?

The last observation may have little or nothing to do with behavioral economics insights into thinking costs, precommitment to prevent acting on future desires, or preference formation, at least as a necessary matter. It is that big tech in various ways fosters and activates potentially destructive fringe communities.

In some ways, this concern is not new. To the extent that people view “news” as a means to reinforce prior predispositions than to acquire shared knowledge, audience fragmentation has been a concern ever since multi-channel TV delivery washed away the three-network era. It became more profitable for many outlets to differentiate themselves through reinforcing minority viewpoints than address the median interests in information. This is largely consistent with (and perhaps a downside of) competition.

In this regard, however, the current big tech environment is exponentially more problematic. Not only is the audience fragmented, but social media allows communication, belief reinforcement, and the planning of potentially explosive events to take place within that audience fragment. Communication is not just one way, from the outlet to a passive audience. Consider that if only a tenth of a percent of the U.S. population has some extreme belief, that’s 330,000 people — considerably more than enough to storm the Capitol, as on Jan. 6, 2021. My strong sense is that the Capitol insurrection is more than the result of thinking costs, failure to precommit, or presence formation itself. Rather, it is the enabling of coordination among those with extreme viewpoints that is new and crucial.¹⁶

“

Standard economics takes preferences as given. However, they have to come from somewhere

¹⁶ Lest this seems politically one-sided, one could wonder what demonstrations in opposition to the Viet Nam War might have looked like had organizers had the same ability to plan via social media as the far right has today.



ADVANCES IN BEHAVIORAL ECONOMICS AND RESPONSIBLE COMPETITION LEADERSHIP: TACKLING SEARCHPLACE DISCRIMINATION



BY
JULIA M. PTASCHUNDER

Columbia University, Graduate School of Arts and Sciences, Julia.Ptaschunder@columbia.edu,
<http://blogs.cuit.columbia.edu/jmp2265>; www.juliampaschunder.com.

01 INTRODUCTION

A. The Rise of Online Searchplaces

Recent decades have seen breakthroughs in technological developments triggering a digital revolution with palpable consequences in our daily lives. The World Wide Web has become a powerful source of information exchange.

By now the constant access to amalgamated crowd wisdom derived from online searchplaces, such as Google, Bing, Yahoo, Duck-DuckGo, Yandex etc., guides human everyday decisions and constant choices.

Since the 1990s, online data presentation started to become more systematically structured. Internet search engines were available for the general public that used software systems carrying out searches on the World Wide Web in a consumer-oriented hands-on, yet fairly unregulated way.

With exponentially-rising information exchange online, human dependency on technological display of information online has risen steadily.² The information gain via technological devices turned into the most relevant information source used all the time, often without reflection.³ With the advent of structured data presentation in online search engines, suddenly the entire world began to use online data provision *en masse* and on a constant basis, imposing a verb to describe this action as “to google” something.⁴

With the rise of social online media internet companies, such as Facebook, Twitter, Instagram and TikTok, and the popularity of smart devices, we have become familiar and more confident with constant information exchange on public online platforms and public display of personal information. With the advent and massification of so-called social networks – personal portals where people constantly register and consult information from their social environments openly online – search engines to navigate big data on the internet became the most important information channels in the modern world. Social media event crowd formation steered revolutions in the Arab world.

Search engines boomed in the wake of the COVID-19 pandemic. Systematic lockdowns of entire populations pushed humans to increasingly use digital devices in order to achieve some sort of social connection on a global level. Crowded hospitals and fear of contagion opened gates for e-healthcare and medical forums to gather crowd wisdom on health and well-being advice. Nations with the technological capability used massive surveillance systems of entire populations to control and contain SARS-CoV-2. Education shifted to remote learning in record speed.⁵

“**Search engines boomed in the wake of the COVID-19 pandemic**”

Today, real-time information collection online holds most valuable insights to guide human interaction, social choic-

es, and everyday behavior on a worldwide scale. The currently-breaking 5G technology will enable digitalization to encroach all sorts and tasks of modern life, which is likely to continuously increase the provision and use of information retrieved online for everyday purposes in the future.

B. Searchplaces Technicalities

The enormous and constantly rising amount of internet searchplace activity is supported by artificial intelligence enabling search engine results generation. Search engines are primarily maintained by algorithms and web crawlers continuously processing a rising amount of information appearing online in real-time. The digital revolution generated algorithmic learning technology with processes resembling human decision making, but much faster and often more efficient.

Search engines have grown quantitatively and qualitatively in the last three decades. Computer capacity to process data rose exponentially. As increasingly sophisticated algorithms provided information cheap, quickly and on a worldwide scale, individuals more and more turned to online search functions as all-around aids in navigating through complex daily lives.

With a rise of information transfer online, search engines became more sophisticated with tools including lists of web pages, images, videos, infographics, articles, research papers and other types of mined data and files associated with particular search terms. Search results and features differ by search platform but most often include short description snippets, images, maps, definitions, answer boxes, videos, news, blogs, knowledge graphs, discovery and suggested search refinements or newly-emerging vocalized commands.

Since the beginnings of search engines in the 1990s, three features and trends remain at the core of online searchplaces: (1) The relevance of real-time adjustment to keep up with a rising communication activity online, (2) the commercialization of internet search functions as markets⁶ and a (3) growing dependence on constantly iterative web crawlers and algorithms to present an exponentially-rising public information exchange on the internet in a palpable way.⁷

2 *Slowbalisation: The steam has gone out of globalisation: A new pattern of world commerce is becoming clearer – as are its costs*, THE ECONOMIST (Jan. 24, 2019), <https://www.economist.com/leaders/2019/01/24/the-steam-has-gone-out-of-globalisation>.

3 Francisco Bariffi & Julia Margarete Puaschunder, *Artificial Intelligence and Big Data in the age of COVID-19*. RAIS CONF. PROCEEDINGS: 24TH INT’L RAIS CONF. ON SOC. SCI. & HUMANITIES 1 (2021), <http://rais.education/wp-content/uploads/2021/11/0115.pdf>.

4 *Id.*; JULIA MARGARETE PUASCHUNDER, ETHICS OF INCLUSION: THE CASES OF HEALTH, ECONOMICS, EDUCATION, DIGITALIZATION AND THE ENVIRONMENT IN THE POST-COVID-19 ERA (2022).

5 Titus Corlatean, *Risk, discrimination and opportunities for education during the times of COVID-19 pandemic*, RAIS CONF. PROCEEDINGS: 17TH INT’L RAIS CONF. ON SOC. SCI. & HUMANITIES 37 (2020), <http://rais.education/wp-content/uploads/2020/06/004TC.pdf>.

6 Bart Pursel, *Search Engines*, PENN STATE PRESSBOOKS (Retrieved February 20, 2018); Neil Gandal, *The dynamics of competition in the internet search engine market*, 19 INT’L J. IND. ORG. 1103 (2001), doi:10.1016/S0167-7187(01)00065-0.

7 Sergey Brin & Larry Page, *The Anatomy of a Large-Scale Hypertextual Web Search Engine*, PROCEEDINGS SEVENTH INT’L WWW7 CONF. (1998, retrieved January 10, 2021); *Method for node ranking in a linked database*, *Google Patents*, archived from the original on 15 October 2015 (Retrieved 19 October 2015); *About: RankDex*, rankdex.com.

The usefulness of search engines depends on the relevance of the results provided to users searching for information.⁸ Most search engines employ methods to rank results based on different constantly-changing criteria, which are not fully made transparent to the public web audience.⁹ A mixture of predefined and hierarchically-ordered keywords programmed by humans is coupled with an inverted index generated by algorithms that analyze located texts and images.¹⁰

Competition among search engines has been a driving force in the evolution of search algorithms filtering relevant results with convenience. Searchplaces mainly compete on speed, accuracy, user-friendliness, and specific content-related searches.¹¹ Search results are partially based on a web of pages, their relevance and credibility ranking.¹² Usually, searches lead to several pages of descending relevancy and accuracy of contents.

To present search engine results online, mainly automated search engine algorithms rank websites based on a combination of popularity and relevancy.¹³ Algorithms include factors such as quality and relevance of the content, expertise, authoritativeness, trustworthiness of websites and author on a given topic, good user experience as well as backlinks.¹⁴

Search Engine Results Pages (“SERPs”) are pages displayed by search engines in response to a query by a user.¹⁵ The results of search engine queries are usually ranked by relevance and credibility. Results usually display titles, links that direct to other pages on the World Wide Web, a short description snippet and descriptions where search terms have matched content with the results page.¹⁶

C. Searchplace Commercialization

Search engine providers generate revenue by commercial ventures – such as advertising, commercialization of listings in search results, search-related advertisements as well as big data analysis.¹⁷ For sponsored results, advertisers choose what to display.

In most recent decades, the placement of homepages and competitive keywords have become an increasingly-important field of business and political interest.¹⁸ Sponsored searchplace results are paid prominent information display – mostly on top of search engine results display – sold to the highest bidding entity. Sponsored creative results on Google have become a lucrative business with the most expensive keywords being sold for legal services, especially personal injury lawyers in highly competitive markets.¹⁹ Targeted ads and classified advertisement that picks up searchplace users when searching for specific information have become prominent tools of online guerilla marketing.

The commercialization and the need to generate revenue, however, may conflict with searchplace providers’ goal to offer the most useful, healthy and accurate information – for instance when one thinks of advertisement to clog limited human attention span capacity, or the social media paid advertisement scandals. Arguably, commercialization may crowd out the overall integrity and usability of searchplaces for users. In 2018, a European Commission study showed that consumers generally avoid paid top searchplace results expecting the sponsoring being less relevant and credible.²⁰

8 Wikipedia entry, *Search Engine*, Retrieved Aug. 20, 2022, https://en.wikipedia.org/wiki/Search_engine#cite_note-29.

9 WAMAN S JAWADEKAR, KNOWLEDGE MANAGEMENT: TOOLS AND TECHNOLOGY, KNOWLEDGE MANAGEMENT: TEXT & CASES (2011).

10 Wikipedia entry, *Search Engine*, *supra* note 8.

11 *Id.*

12 *Id.*

13 EL SEGEV, GOOGLE AND THE DIGITAL DIVIDE: THE BIASES OF ONLINE KNOWLEDGE (2010); Liwen Vaughan & Mike Thelwall, *Search engine coverage bias: evidence and possible causes*, 40 INFO. PROCESS & MGMT. 693 (2004), doi:10.1016/S0306-4573(03)00063-3; Google, *How search works* (Retrieved Aug. 20, 2022), <https://www.google.com/search/howsearchworks/how-search-works/ranking-results/>.

14 Google, *id.*

15 Wikipedia entry, *Search Engine Results Page*, *id.*

16 *Id.*

17 Google, *supra* note 13.

18 *Google Warns: Automated Queries on Google is against the Terms of Service*, seroundtable.com (Retrieved Apr. 4, 2017), <https://www.seroundtable.com/google-warns-automated-queries-23135.html>.

19 Wikipedia entry, *Search Engine Results Page*, *id.*

20 *Behavioural Study on the Transparency of Online Platforms*, European Union 19 (2018, retrieved Apr. 22, 2021).

02

SEARCHPLACE DISCRIMINATION

A. Systemically-Biased Searchplace Discrimination

While digitalization offers unprecedented human advancement in access to worldwide information, recently attention was drawn to systemic biases in searchplaces. Online information display in modern searchplaces have generated notable repercussions for arguments about human harmful biases influencing and replicating in algorithmic choices.

Empirical studies found political, economic, and social biases in the information display search engines provide.²¹ Technological, political, societal but also economic biases have been addressed as underlying causes.²² Biases are likely unnoticeably transmitted by programmers and artificially-created big data generated from large-scale preference amalgamation.²³ Online search engine portals have done most important work and attempts towards eradicating or – at least – alleviating biases.

At the same time, shifting marketplaces to online virtual spaces opens gates for misinformation and disinformation in search engines and online forums being intentionally used in a competitive, dishonest, and harmful sense.

B. Searchplace Discrimination due to Search Engine Exploitation

Besides technically-transmitted biases, search engine “rebel” users exploit the structures of search engine algorithms to strategically manipulate search results, often for commercial or strategic reasons.

Search engine optimization (“SEO”) is the strategic manipulation of search engine results for political, career, social and commercial advantages. Positive SEO targets at improving the search engine listings of web pages for relevant content search terms.

Negative SEO aims at reducing the quality and relevance of search results of professional and commercial competitors. Negative search engine de-optimization (“SEDO”) refers to strategic searchplace manipulation that aims at changing the perception of a term or push out competition from search engine results.²⁴ SEDO is primarily done for business, political, comical, and competitive purposes.²⁵

In the case of Google – the most prominent search engine in the Western world – SEDO happens, for example, in the form of Google Bombing or Googlewashing, which causes a website to rank highly in web search engine results for irrelevant, unrelated or off-topic search terms. Spamdexing is the practice of deliberately modifying website markup (“HTML”) to place a website close to the beginning of specific search engine results or to assign a page to unrelated content in a misleading or dishonest manner.²⁶

While these terms are primarily focused on webpages, individual search terms can also be subject to negative SEDO, which is referred to individual searchplace discrimination. Searchplace discrimination is primarily used in political, educational, and academic cases, where reputation capital stakes are high.

So-called Search Engine De-optimization black hat strategies are competitive and unethical distortions of search engine results that either overemphasize unfavorable search results (likely enabled via clickfarms) or create a misinformation, disinformation or spam overload that derails from accurate representations of individuals or entities online.

The strategic manipulation of SEO in a harassing, misrepresenting and discriminatory online display of unassociated,

21 SEGEV, *supra* note 13; Liwen & Thelwall, *supra* note 13; Bernard J. Jansen & Soo Young Rieh, *The Seventeen Theoretical Constructs of Information Searching and Information Retrieval*. 61 AM. SOC’Y INT’L L. PROC. 1517 (2010).

22 SEGEV, *id.*; Liwen & Thelwall, *id.*; Jansen & Rieh, *id.*; Berkman Center for Internet & Society, *Replacement of Google with Alternative Search Systems in China: Documentation and Screen Shots*, Harvard Law School (2002); Lucas Inrona & Helen Nissenbaum, *Shaping the Web: Why the Politics of Search Engines Matters*, 16 INFO. SOC’Y 169 (2000), doi:10.1080/01972240050133634. S2CID 2111039.

23 Bariffi & Ptaschunder, *supra* note 3; JAMIE BARTLETT, *THE PEOPLE VS. TECH: HOW THE INTERNET IS KILLING DEMOCRACY AND HOW WE SAVE IT* (2018); MALCOLM FRANK, PAUL ROEHRING & BEN PRING, *WHAT TO DO WHEN MACHINES DO EVERYTHING: FIVE WAYS YOUR BUSINESS CAN THRIVE IN AN ECONOMY OF BOTS, AI, AND DATA* (2017); MICHAEL D. SMITH & RAHUL TELANG, *STREAMING, SHARING, STEALING* (2017); SETH STEPHENS-DAVIDOWITZ & STEVEN PINKER, *EVERYBODY LIES: BIG DATA, NEW DATA, AND WHAT THE INTERNET CAN TELL US ABOUT WHO WE REALLY ARE* (2018).

24 Orlowski, Andrew, *Anti-war slogan coined, repurposed and Googlewashed in 42 days*, THE REGISTER (April 3, 2003, retrieved Jan. 6, 2007); ANDREW A. ADAMS & RACHEL McCRINDLE, *PANDORA’S BOX: SOCIAL AND PROFESSIONAL ISSUES OF THE INFORMATION AGE* (2008).

25 Tom Zeller. *A New Campaign Tactic: Manipulating Google Data*, THE NEW YORK TIMES, October 26, 2006, at 20; Wikipedia entry, *Google bombing* (retrieved Aug. 20, 2022), https://en.wikipedia.org/wiki/Google_bombing#cite_note-nytimes1-1; Gary Price, *Google and Google Bombing Now Included New Oxford American Dictionary*, SEARCH ENGINE WATCH (May 16, 2005, archived January 27, 2007, retrieved January 29, 2007).

26 ZOLTÁN GYÖNGYI & HECTOR GARCIA-MOLINA *WEB SPAM TAXONOMY* (2005).

harmful, or violent information is often based on concrete strategies. This hardly-discussed and mainly-unregulated market information distortion discriminates individuals or entities, who hardly have legal protection, regulatory control mechanisms or community support from the individual and consumer perspective.

B. Search Engine De-Optimization (“SEDO”) technicalities of searchplace discrimination

Searchplace discrimination occurs when individuals are targeted by erasing online quality content information, potentially due to data compartmentalization and wrong flagging of search results as well as overemphasizing negative, unrelated, spamming, or harmful content, potentially via clickfarms and automated bots.

First, negative SEO comes to play in strategically-manipulating of breaking big data clouds in combination with pegging harmful, outdated, or useless spamming information to actual content keywords describing the victim, so no coherent information is found, and no stable knowledge panel is formed. Data compartmentalization may be enabled by capping Google search results at a low number (indicated by Google). The algorithm is tricked to cap the number of search results by infusing critical or unfavored contents (e.g., crimes, hate speech, obscene language, violent, illegal, sexual or outdated content) and then highlighting unfavorable, misleading and/or compromising information via clickfarms in the cropped displayed results. Search engine data cloud compartmentalization may be used to create separate data clouds with positive and negative results, in order to then overemphasize negative or useless search engine results while shifting quality content into clusters that appear under unrelated searchterms or keywords.

Second, SEDO can be used to erase online content by inappropriately flagging competitors’ quality or favorable contents in order to make competitors’ positive image cues disappear and/or the big data of competitors less relevant for search engines. SEDO is possibly due to the fact that most real-time searchplaces are enabled mainly based on algorithmic iterative processes and human quality control of flagging is limited. Positive or content information can thus be erased by flagging content online that gets immediately taken offline. The process includes hardly any resuscitation control by human review. While there is a positive possibility to craft the internet search results together and positive quality control is enabled via flagging online content, reporting inappropriate online content gets blocked immediately. Little quality control is given to this option being used as a strategy to push down or make appropriate content disappear in the wake of competition.

Third, up-playing and aggressively displaying negative contents, calling on hateful online crowds and bad reviews in order to damage competitors’ reputations, may be enabled via clickfarms and Amazon mechanical Turk (“mTurk”), algorithmic repetitive accessing of online contents via bots and posting in hateful echo chambers of the internet. Wrong images displayed – potentially brought into Bing searches via related search results of clickfarms in combination with shooting out quality images through backlinks, pegging quality contents to harmful or outdated contents (e.g., crimes or ancient death notices) in third-party knowledge broker systems (e.g. SlideToDoc, Pagaloo, DATAalyze, Readcube etc.) and comment buttons fed with flagged content – are additional black hat techniques to bring down quality search results and elicit a false image in a malicious and/or harmfully-competitive way.

These manipulations impose a wide range of damage and negative externalities. For instance, if individual consumers struggle to find credible results. In the case of vulnerable populations, such as children – innocent internet users may end up traumatized when being exposed to harmful, aggressive or violent contents. Victims of cyberbullying and searchplace discrimination may face an uphill battle when it comes to critical life gateway decisions determining educational paths and careers. The socio-economic damage may include impairment of careers, scientific advancement but also derailed purchase potential when it comes to searchplace discrimination against promotion and job market candidates, finance professionals, academics and authors or artists selling products, services or ideas online.

03

REGULATING SEARCHPLACE DISCRIMINATION

With instant information exchange on social online media playing an increasing role in politics, finance and economics, governments all over the world have set out to better understand the collective impact of online content.²⁷ Social crowd control through online information display has become subject to debate of governmental security.²⁸

The role of social media online information exchange for law making, in particular in developing customary law in the international law context, has recently become subject to

27 New Zealand Prime Minister Jacinda Ardern, Harvard Commencement Speech 2022, May 26, 2022, YouTube, Retrieved at <https://www.youtube.com/watch?v=xOg7FJBBbJc>.

28 Speech by Foreign Minister Annalena Baerbock, Seizing the Transatlantic Moment: Our common responsibility in a new world, The New School, New York City, Aug. 2, 2022, TWITTER, Retrieved at <https://twitter.com/i/broadcasts/1YpKkZlBtLgAxj>.

scrutiny by the International Law Commission and debate in global governance and policy contexts.²⁹

In the comparative international arena, governance, and governmental approaches to regulate internet activities differ substantially around the world. Even with the complex supranational legal system of the European Union, the approaches of individual countries in curbing the global phenomenon of internet security vary.

The governmental and regulatory responses to individual searchplace discrimination are to this day just forming in response to industry developments. Individual searchplace discrimination via SEDO techniques and black hat strategies are fairly undiscussed and unregulated. One reason for this may be that the changes to search results often appear only temporally and/or gradually so that the manipulation is barely noticed and hard to track down. Discourse on these tactics remains scarce, and legal and regulatory measures appear insufficient.

In general, previous SEO growth has resulted in consumer pressure to debias searchplaces. In recent years, the public opinion and stakeholder critique made – for instance – the market leader Google pay increasing attention to correcting errors and manipulative distortions.³⁰ With Google management having become aware of deliberate distortions of search results and increasing stakeholder concern over the credibility and misuse of online searchplaces, industry responses against strategic, competitive manipulation have turned search engine providers to punish strategic manipulation of search engine results.³¹

Technically, search engine engineers, like Google and Bing, can change the position of a website if ranked very low compared to its competitors but it requires human attention and likely compulsory regulatory action for searchplace providers to do so.³² If being called for action and detecting misuse, Google can immediately remove spam and harmful contents from Google searches and also correct

misleading snippets.³³ Google also informs that if strategic manipulation of search results gets noticed, an overcorrection towards the other end of the display spectrum, hence overemphasizing the disturbed result, may occur in order to punish and deter searchplace manipulation. Bing can exclude related search bubble suggestion buttons if harmful or violent content pops up. Amazon can curb its search results to specific content results if the suspicion exists that unrelated products are maliciously pegged to a competitor to bring down credibility or water down a specific big data cloud formation. Searchplaces permit owners of websites to disavow harmful and spamming backlinks pegged to websites.³⁴ All these measures, however, require the awareness, attention, knowledge and pro-active engagement of the searchplace-discriminated victim.

To this day, however, behavioral black hat strategies that have become prominent to be used competitively in searchplaces, such as Google, Yahoo, or Bing, are not well-regulated by governmental or governance efforts. The economic power dynamics and legal situation around competitive search engine results manipulation and its wider implications for entire affected domains are still not sufficiently covered in the academic and practitioners' literature.

Studying the socio-economic market dynamics of SEDO could help in order to present potential legislative, regulatory, and institutional remedies to curb harmful market, socio-economic and individual consequences of searchplace discrimination. To this day, the currently available remedies are inadequate to provide effective relief for victims of searchplace discrimination, demanding for advances in behavioral economics and responsible competition leadership to concern the topic.

In general, previous SEO growth has resulted in consumer pressure to debias searchplaces

29 James A. Green, *The Rise of Twiplomacy and the Making of Customary International Law on Social Media*, 21 CHINESE J. INT. LAW. 1 (2022), <https://doi.org/10.1093/chinesejil/jmac007>.

30 *Official Google Webmaster Central Blog: A quick word about Googlebombs*, googlewebmastercentral.blogspot.com (January 25, 2007, retrieved July 9, 2010); Jacqui Cheng, *Google defuses Googlebombs*, NEWS: ARS TECHNICA (January 26, 2007, retrieved January 27, 2007), https://en.wikipedia.org/wiki/Search_engine_results_page.

31 Marissa Mayer, *Official Google Blog: Googlebombing 'failure'*, googleblog.blogspot.com (September 16, 2005, retrieved July 9, 2010); Noam Cohen, *Google Halts 'Miserable Failure' Link to President Bush*, THE NEW YORK TIMES (January 29, 2007, retrieved May 3, 2010); *Urban Legends Reference Pages: Miserable Failure*, Snopes.com (Retrieved July 9, 2010); googlewebmastercentral.blogspot.com, *id*.

32 *Is CTR A Ranking Factor in Organic Results?*, SEARCH ENGINE LAND (August 12, 2015, retrieved May 14, 2022), <https://searchengineland.com/ctr-ranking-factor-227162>.

33 See Google Developers at https://developers.google.com/search/docs/advanced/guidelines/report-spam?utm_source=wnc_652000&utm_medium=gamma&utm_campaign=wnc_652000&utm_content=msg_712700&hl=en&visit_id=638012791146250546-3049517595&rd=1.

34 See Google Search Console at https://search.google.com/search-console/disavow-links?resource_id=http://juliampuaschunder.com/&utm_source=wnc_649702&utm_medium=gamma&utm_campaign=wnc_649702&utm_content=msg_711402&hl=en.

04

ADVANCES IN BEHAVIORAL ECONOMICS AND RESPONSIBLE COMPETITION LEADERSHIP

The subliminal influence of environments on human decision making is studied by behavioral economics. Behavioral economics started in the 1950s with a theoretical critique of the neoclassical economic rational choice model in an iconic entrance of psychological and sociological contents in economics.

From the 1970s on, human decision-making was then investigated in laboratory and field experiments. Empirically, behavioral economists found heuristics as quick human decision making standards that often deviate from pure rationality. Behavioral science systematically outlines human decision-making deviations from rationality in mental shortcut heuristics. Heuristics were perceived as failures in the North American Behavioral Economics School, while the European tradition saw human decision making as successful strategy to cope with an overly complex world.³⁵

In the last decade, behavioral economics became applied to political contexts in a behavioral insights revolution. Behavioral insights showed how to use nudging and winking to help citizens to make rational choices. Over time, behavioral insights specialists developed a broad range of nudges and winks to curb the harmful consequences of human decision-making or improve human fitness to adapt to an uncertain environment and complex world. Some of these powerful nudges to benefit from life and economic markets were communicated openly, while other behavioral insights were more subliminal change strategies.

From around the turn of the millennium, behavioral economics turned to big data online settings in order to guide human choices by strategic manipulation. Behavioral Economics and Finance Leadership demonstrated how economics can be employed for the greater societal good, also when it comes to digitalization and online searchplaces.³⁶ Most recently, systemic heuristics and biases are captured in big data of online observations.

While behavioral economics primarily focuses on how to use nudges and winks to make the world a better place in helping humans make wiser decisions in favorable environments; to this day less is written and known about strategic manipulation of online environments by deleting information, clogging online searchplace users with unnecessary misinformation or compromising individual search profiles with disinformation.³⁷

Most recently, leadership and followership directives on nudging in digitalized spaces emerged that appeal to scholars and policy makers interested in rational decision-making and the use of nudging and winking in the digital age.³⁸ With the advent of digitalization and the COVID-19 pandemic digital shock, but also in light of the lurking 5G revolution tying success even stronger to navigating a mounting big data online jungle, the time is ripe for behavioral insights to turn a critical eye to searchplace discrimination and dedicate behavioral insights attention to self-determined internet user empowerment to correct abuse of algorithmic loopholes. Behavioral economics and competition leadership can now be advanced by aiding in creating inclusive digital worlds and discrimination-free online searchplaces in individualized-sensitive search results and self-determined search results reputation control.

05

TECHREG AGAINST SEARCHPLACE DISCRIMINATION

Future behavioral insights could improve societal welfare in online virtual worlds and alleviate online inequalities. Legal advancements should include clear guidelines and oversight of fraudulent use of the internet in a competitive way that manipulates genuine algorithm results, for instance via clickfarms or backlinks that curb or tilt search results in a particular way. Regulatory oversight could draw from the wisdom developed in behavioral economics on how environments can form opinions and manipulate choices even subliminally. Those who face a searchplace discrimination disadvantage should be protected by legal means, technical support and rescue funds established by the industry to uphold to favor quality over unethically in their profession.

35 JULIA MARGARETE PUASCHUNDER, BEHAVIORAL ECONOMICS AND FINANCE LEADERSHIP: NUDGING AND WINKING TO MAKE BETTER CHOICES (2020).

36 *Id.*

37 *Id.*

38 *Id.*

06

STAKEHOLDER SUPPORT AGAINST SEARCHPLACE DISCRIMINATION

In an attempt to declog search engine results and break the malicious pegging of content to unrelated or harmful information to bring down SEO, technological regulatory remedies and user empowerment strategies could expand on the U.S. Digital Millennium Copyright Act (“DMCA”) that allows for the removal of copyrighted material if used without consent by the copyright holder. Regulators could build on and/or strengthen the DMCA as a remedy to erase the unlawful use of copyrighted material on harmful, outdated or useless spamming webpages that curb a proper big data cloud formation and push down favorable and/or valuable content search engine results. Informing the public about the DMCA in general information campaigns and educating about the occurrence of SEDO strategies, could raise critical awareness and sensitivity for searchplace discriminated victims and empower copyright holders and especially authors to maintain a fair online competition position.

When it comes to internet rebels inappropriately using flagging and report buttons to weaken or make quality content of competitors unavailable, regulatory due diligence and legally-enforceable human control over what gets flagged and who manipulates search results strategically is recommended. The previously-successfully-advocated “Right to Delete,” could be turned into a “Right to not be Deleted.” The “right to delete” or “right to be forgotten” developed by Mayer-Schönberger and adopted by the Court of Justice of the European Union (“CJEU”) allows for individuals to order the deletion of private information and removal of private information from Internet searches and other directories. This right could be reverse-extended into a “right to not be deleted” to instigate better quality control of online flagging tools with attentive oversight of humans instead of automated algorithmic action that likely can easier be manipulated.³⁹ As a punishment for flagging abuse, overemphasizing of strategically-incorrectly removed content may also deter from using SEDO techniques. Like in fines and legal punishment, repetitive malicious wrongdoing could grant the harmed victim higher credibility and compensation status, for instance in the rising uplifting overrepresentation of erroneously-flagged important content.

Awareness building for SEDO tactics used in competitive settings will hopefully empower users to respond to inappropriate automatic erasing of quality content by search engines. Like in previous stakeholder advocacy, consumer pressure may instigate search engine operators to create the necessary fast, easy and efficient communication channels to curb harmful reliance on algorithms being prone to e-heuristics. Suspicious data compartmentalization should become tracked by search engine providers and easily accessible tools to visualize content clouds should be offered to decentralize search engine results presentations. People should have a right to know about their data clouds and have an active stance on shaping content that is pegged to their online image.

Professional groups should align to curb unprofessional online conduct and offer information in trainings how to detect online cyberbullying by competitors and colleagues. The issue is particularly important in higher education and academia where online visibility and reputational capital are guideposts in developing successful careers. Concerted reporting mechanisms could become the basis for a registry of incidents that would lay open certain pockets of harmful institutions, professional groups and/or colleagues that may strategically remove competitors’ contents online. Professional representation and union groups could drive advocacy for better institutional support against searchplace discrimination. Collegiality trainings and whistleblower protection to empower victims are future advancements to curb negative SEDO. Professional groups are in particular called for addressing the problem of searchplace discrimination as bringing down colleagues and muffing excellence and ambition by rebellious searchplace users degrade entire research communities and stop academic discourse-driven advancements in competitive fields. Automatic scanning coupled with human oversight as a double-layer protection are especially needed for vulnerable populations, such as – for instance – during early career stages and critical gatekeeper moments – such as tenure decisions or when job candidates are competing on the job market.

Future behavioral law and economics advancements could directly investigate the societal burden and disparate impact of derailed digitalization on particular groups that hinder fair competition. Legal scholars may spearhead an analysis how to detect disparate impacts online in regard to vulnerable populations of untenured or job seeking academic candidates on the job market. Behavioral economists may work on incentivization schemes for victims to speak up against cyberbullies and online searchplace platform providers to punish discrimination (e.g., in overemphasizing positive search results of the bullied) in order to deter from online misconduct. Technical support may be concerned with creating a right infrastructure to track online SEO performance in real time and especially monitor changes as SEDO often appears as malleable and unnoticeably gradual changes. Behavioral insiders could work on how to alleviate biases in an uncertain online world that changes quickly based on algorithmic heuristic choices. Behavioral competition leadership trainings could work towards uplifting and empowering weaker societal segments and in particular vulnerable

³⁹ VIKTOR MAYER-SCHÖNBERGER, DELETE: THE VIRTUE OF FORGETTING IN THE DIGITAL AGE (2009).

groups, such as people in direct competition, job market candidates or tenure-clock contestants, in our online digital workplaces and online searchplaces.

Awareness building in affected stakeholder groups is key – especially in social groups and decision-making leaders, such as behavioral economists, who are prone to understanding the often-unnoticed impact of favorable and unfavorable environmental “nudges” guiding individuals’ choices, oftentimes subliminally. Awareness-raising should be provided to hiring authorities to not discriminate against cyberbullied job market candidates and potentially rescue scholarships and quotas established for those whose career has taken a hit due to SEDO.

Self-help groups should be cultivated that empower against cyberbullying and exchange ideas to combat searchplace discrimination. Strategy exchange could include self-help tactics to piggyback on negative SEDO and Googlewashing. For instance, when bullies use Googlewashing or clickfarms to play up dormant internet social media profiles without content (e.g., an old unused Facebook, Twitter, Instagram or YouTube account with no information and followers), waiting until Google features the account prominently in searches is recommended and then playing in a lot of quality content information at once can be a powerful strategy to curb Googlewashing and replace spam with content and deter further clickfarm attraction.

After all, sensitivity for cyberbullying via misinformation, disinformation and spamming could elevate professions to a more ethical ground and uphold focus on excellence and merit rather than breeding discreditation potential due to lacking human-algorithmic control.

07 FUTURE ADVANCEMENTS IN BEHAVIORAL E-LAW AND ECONOMICS

The age of digitalization opens gates for searchplace discrimination, which is hardly captured in legal regulation or workplace anti-discrimination laws. Online inclusion should be free from any form of discrimination – may it be direct and obvious or more discrete. Future ethics of online inclusion should build on behavioral law and e-economics insights.

Future advancements in behavioral economics and finance leadership may address this abyss of discriminatory actions

online and find ways how to avert the negative implications of searchplace black hat strategies. Most recent law and economics developments of the future could become the basis for solving practical ethical dilemmas arising from the disparate impact of negative SEDO strategies.

The strategic display of information but also the competitive infiltration of online search results with harmful content, nonsense or unrelated cues should become subject to scrutiny and academic discourse ignited over upholding ethics and merit-based anti-discrimination. Anti-discrimination measures of the future should start to integrate insights about searchplace strategies. Searchplace providers, such as search engines but also social media tools and career platforms, should help refine search results and work towards wiser and more harmonious human-algorithmic interactions. As a long-term goal, improving the algorithm-human-interaction gap could aid in quality control over online contents and content removal.

Ethics of online inclusion, law and economics analyses of searchplaces and interdisciplinary dialogue building on searchplace ethics but also human-artificial intelligence algorithm compatibility and checks-and-balances to tackle searchplace discrimination are expected to become key advancements in behavioral e-ethics and competition leadership of the future. All these endeavors may lead to an interdisciplinary understanding and sound TechReg framework for online inequality alleviation that can set the course for a better online future in a more inclusive digital world. ■

“*The age of digitalization opens gates for searchplace discrimination, which is hardly captured in legal regulation or workplace anti-discrimination laws*”



QUIS CUSTODIET IPSOS CUSTODES? BEHAVIORAL PUBLIC CHOICE THEORY AND THE DEBATE OVER ANTITRUST REFORM



BY
ANDREA ASONI

Dr. Asoni is a principal in the Antitrust & Competition Economics Practice at Charles River Associates (“CRA”) in Washington, DC. The views expressed herein are the views and opinions of the author and do not reflect or represent the views of Charles River Associates or any of the organizations with which the author is affiliated. I would like to thank Elizabeth Bailey for helpful comments. All remaining errors are mine..

01 COGNITIVE BIASES EVERYWHERE

Economists have long recognized that among the justifications for government intervention are so-called “market failures,” conditions that prevent the market economy to lead to efficient outcomes.² Broadly speaking market failures include market power, which limits the incentives of firms to compete for consumers and

² The existence of market failures is not the only justification for government intervention. Another example is the pursuit of certain redistributive goals. A discussion over the role of the government in the economy is outside the scope of this article.

perhaps innovate, asymmetries of information, which may prevent consumers to drive competition between firms, and externalities, which lead markets to produce too much or too little of certain goods.

Since Tversky's and Kahneman's seminal work on risk, economists have identified several "behavioral biases," i.e. deviations from standard assumptions on firms' and individuals' rationality embedded in neoclassical economics, which either reinforce some of the market failures identified above³ or provide justification – according to some – for additional government intervention. Behavioral economics is not only a successful field within the economic profession⁴ but has influenced economic policy and firms' behavior: in 2010 the "Behavioral Insights Unit" was instituted within the UK cabinet to design more effective economic policies using behavioral economics insights.⁵ A similar unit was established within the US government in 2015.⁶ Many more governments, large organizations, and universities have created similar units since. The OECD counted 202 organizations with behavioral units in 2020.⁷

Antitrust enforcement is driven by a careful analysis of the facts on the ground by the agencies, as well as by private practitioners and the courts. As such, behavioral economics can be another tool at the disposal of enforcers and courts, when the facts are better explained by behavioral biases rather than the standard economic framework. However, it is sometimes overlooked that behavioral biases affect not only consumers and firms, but also enforcers, regulators, and legislators. While it has been well understood for many decades that policymakers do not necessarily pursue the "public good" but respond to private and public incentives, only recently social scientists have focused on the implications of behavioral economics on the actions and choices of regulatory bodies.

A growing body of research has shown that government agencies do indeed share many of the same behavioral biases as consumers and firms. Furthermore, this literature suggests that the political process may lead regulators to institutionalize behavioral biases rather than overcome

them. As the debate over the need for more aggressive antitrust enforcement and/or regulation intensifies, it becomes crucial to understand if and how best to reform antitrust in light not only of the behavioral biases of consumers and firms, but of policymakers as well. After briefly summarizing the implications of consumer and firm behavioral biases on antitrust policy, this article will present a few insights from this growing literature on behavioral policy making and discuss its implications for the antitrust debate.

02

WHAT DOES THE IRRATIONALITY OF FIRMS AND INDIVIDUALS PRESCRIBE FOR ANTITRUST?

Behavioral economics initially focused on individuals' tolerance for risk, uncertainty, and how people assessed gains and losses. While neoclassical economics treats individuals as rational actors, maximizing their expected utility, fully assessing the information available to them, behavioral economists suggest that individuals have limited, bounded rationality and exhibit several cognitive biases. For example, according to the standard expected utility theory people should weigh gains and losses the same way and treat equivalently lotteries with the same expected value. It turns out that this is not the case: individuals dislike losses more than they like gains, are prone to overestimate small risks, and dislike uncertainty over potential risks (the latter referring to imprecision in estimating the likelihood of an event).

In the field of Industrial Organization, the field of economics closest to antitrust and competition, economists have ana-

3 For example, consumer "stickiness" may create or reinforce market power.

4 Daniel Kahneman was awarded the Nobel prize in economics "for having integrated insights from psychological research into economic science, especially concerning human judgment and decision-making under uncertainty" in 2002, and Richard Thaler was awarded the Nobel prize in economics "for his contributions to behavioral economics" in 2017.

5 The "Nudge Unit," as it is also known, has since been incorporated into a limited company fully owned by British charity Nesta.

6 The Social and Behavioral Science Team was established in September 2015 (see, <https://obamawhitehouse.archives.gov/blog/2015/09/15/designing-federal-programs-american-people-mind>). This team stopped being operative in 2017 and its work is currently done under the General Services Administration's Office of Evaluation Sciences (see, <https://www.psychologicalscience.org/policy/the-us-office-of-evaluation-sciences-releases-2016-2017-results.html>).

7 <https://www.oecd.org/gov/regulatory-policy/behavioural-insights.htm>.

lyzed several forms of irrationality, both related to consumers' behavior as well as firms conduct.⁸ Most of the recent work focuses on behavioral issues on the consumer side of the market and how firms exploit consumers' weaknesses. For example, consumers may look at relative rather than absolute search costs when it comes to purchasing goods: people are typically willing to travel one hour across town to save \$10 on a \$20 t-shirt but are not willing to make the same trip to save \$10 on a \$1,000 laptop computer.⁹ Standard economics would predict that consumers would make the same decisions in both cases, but behavioral economists have shown this not to be the case. This means that search costs may be more important for large-ticket items than small-ticket items.

In general, many of these biases will arise because of what Kahneman called "fast thinking," i.e. the tendency of our brains to adopt heuristics, cognitive shortcuts, and simple decision rules that lead to fast, and typically good-enough, decisions without expending considerable cognitive resources. Fast thinking is opposed by "slow thinking" which instead is more methodical, rational, effortful.¹⁰ Another behavioral bias is that consumers tend not to look at pricing terms that are not provided upfront: this is the kind of behavioral bias that firms will try to exploit, for example, by "hiding" prices behind add-ons, employing differently structured tariffs and strategies as "drip pricing."

The tech sector has come under scrutiny as a particularly fertile ground for use (and abuse) of consumers' behavioral biases. Tech firms typically can collect detailed data on consumer behavior and use sophisticated algorithms to manipulate it. The Federal Trade Commission has recently released a report on "dark patterns" in web commerce which refer to "deceptive design elements" and "practices that raise consumer protection concerns."¹¹ The FTC discusses several dark patterns designed to either hide prices (for example, burying additional fees, mandatory charges, etc.), induce consumers to pay for products they do not

want to purchase, or steer consumers towards sharing their personal information. Additional research has shown that dark patterns mostly impact the poor and uneducated, and concluded that dark patterns are particularly harmful when combined with market power.¹²

Firms are often considered less prone to behavioral biases for three reasons: (1) they rely on expert consultants for their strategic, financial, marketing, and pricing decisions; (2) firms focus on a limited number of markets, accumulating knowledge and experience, while consumers often deal with many markets; (3) competition will more promptly force "irrational" firms out of the market, than irrational consumers. Nevertheless, economists have identified several instances of behavioral biases for firms. For example, boundedly rational owners/managers or overconfident managers may affect firm behavior.¹³

Given the broad array of potentially irrational behaviors from either consumers or firms, or both, it is challenging to identify how behavioral economics affects antitrust policy and enforcement as a whole. However, it seems fair to say that behavioral economics has become complementary, rather than alternative, to traditional economics when it comes to antitrust enforcement. It should come as no surprise since antitrust is highly fact-specific; as such, economists and attorneys strive to find the best economic and legal models that fit the facts of the case. As discussed more in detail in Bailey (2015), there are several antitrust cases that relied on behavioral models, as opposed to standard economics.¹⁴

“The tech sector has come under scrutiny as a particularly fertile ground for use (and abuse) of consumers' behavioral biases

8 A complete review of this literature is well beyond the scope of this article but interested readers can refer to the Handbook of Behavioral Industrial Organization for a complete overview. See the *Handbook of Behavioral Industrial Organization*, edited by Victor J. Tremblay, Elizabeth Schroeder, Carol Horton Tremblay, published by Edward Elgar Publications (2018).

9 Bennett, Matthew, John Fingleton, Amelia Fletcher, Liz Hurley & David Ruck. "What Does Behavioral Economics Mean for Competition Policy?" *Competition Policy International* 6, 1: 110-137, discuss this example as well as several others.

10 Kahneman, Daniel. "Thinking, Fast and Slow." Published by Farrar, Straus and Giroux (2013)

11 Lesley Fair, September 19, 2022. "FTC issues illuminating report on digital dark patterns." Available at: <https://www.ftc.gov/business-guidance/blog/2022/09/ftc-issues-illuminating-report-digital-dark-patterns>.

12 Stigler Committee on Digital Platform – Final Report, section on Privacy and Data Protection (p. 206). Available at: <https://www.chicagobooth.edu/research/stigler/news-and-media/committee-on-digital-platforms-final-report>. Also see Luguri, Jamie & Jacob Strahilevitz. "Shining a Light on Dark Patterns." *Journal of Legal Analysis* 13, 1 (2021): 43-109. Available at: <https://academic.oup.com/jla/article/13/1/43/6180579>.

13 For example, see chapters 6, 7, 9, and 12 of the Handbook of Behavioral Industrial Organization, *supra*.

14 Bailey, Elizabeth. "Behavioral Economics and U.S. Antitrust Policy." *Review of Industrial Organization* 47 (2015): 355–366.

03

PUBLIC CHOICE THEORY

Let us now turn from consumers and firms to policymakers. Even before the rise of behavioral economics, social scientists understood that, rather than disinterested servants of the public interest, policymakers are rational actors that respond to incentives. In its seminal work, “The Theory of Economic Regulation,” George Stigler framed the issue in terms of supply and demand of regulation and posited that, in democracies, organized minorities can often benefit at the expense of the general public. Regulations are not the outcome of public minded, or even neutral, individuals but rather the result of political preferences, private and public interests, and their ability to organize and exert pressure on elected officials and unelected bureaucrats. Recent work from the University of Chicago Stigler Center, following in the footsteps of its namesake economist, suggests that potentially lax enforcement of antitrust laws in the past forty years is not the result of a change in voters’ preferences but rather the result of the influence of special interests, such as “big business,” that benefited from less aggressive antitrust enforcement and managed to push this agenda among unelected bureaucrats such as judges and regulators.¹⁵

04

BEHAVIORAL PUBLIC CHOICE THEORY

The main contribution of public choice theory is to show that regulations are the product of a political process and may not reflect (only) the interests of the public. Public choice theory, however, never posited irrational, or otherwise cognitively biased, policymakers but rather assumed rational actors operating in their own self-interest, as is typically done in neo-classical economics. Building on the insights offered by both public choice theory and behavioral economics, a recent and growing strand of literature has been

studying if and how policymakers are affected by the same behavioral biases as the firms and consumers that they purport to regulate. There are several key insights from this literature: first, policymakers are subject to the same cognitive biases as consumers and firms. Second, because of the nature of the political process and accountability of policymakers to the public, government policies may institutionalize such behavioral biases rather than overcome them. For two surveys of this relatively new field see Schnellenbach & Schubert (2014)¹⁶ and Lucas & Tasic (2015).¹⁷ Below I will discuss a few insights from this body of work.

A. Risk Perceptions and Public Policy

Viscusi & Gayer (2015)¹⁸ focus on risk perceptions and document several areas in which government agencies exhibit the same behavioral biases as individuals. One well documented finding in behavioral economics is that individuals overestimate small risks and the benefits derived from eliminating such risks, while underestimating the benefits from eliminating large risks. Furthermore, people tend to underestimate the benefits from reducing any risk, unless the risk has been *completely eliminated*. Viscusi & Gayer suggest that government agencies suffer from the same bias: for example, the Environmental Protection Agency systematically overestimates small risks associated with exposure to certain dangerous chemicals because it compounds conservative estimates which often lead to estimated risks that are significantly higher than the actual risks. Viscusi & Gayer also suggest that the significant changes to airport security introduced after the terrorist attacks of 9/11 may have been spurred by the same bias. While these measures have had some benefits, they also generated costs to civil liberties and privacy. Both costs and benefits, however, are hard to assess in part because these are low probability events, and it is nearly impossible to estimate what reduction in probability of another 9/11 attack actually occurred.

Another well documented behavioral bias is “ambiguity aversions,” which is people’s aversion to hard-to-estimate probabilities. For example, consider a car that will fail 2 out of 100 times and a car that will fail with 50 percent chance 1 out of 100 times and with 50 percent chance will fail 3 out of 100 times. Even though the expected probability that the cars will fail *is the same*, people will tend to choose the first car which offers a “certain” probability of failure. According to Viscusi & Gayer, government policies often reflect the same ambiguity aversion towards novel risks. For example,

15 Lancieri, Filippo, Eric A. Posner, and Luigi Zingales. “The Political Economy of the Decline in Antitrust Enforcement in the United States.” *Antitrust Law Journal* (forthcoming).

16 Schnellenbach, Jan and Christian Schubert. “Behavioral political economy: A survey.” *European Journal of Political Economy* 40, B (2015): 395-417.

17 Lucas, Gary & Slavisa Tasic. “Behaviora Public Choice and the Law.” *West Virginia Law Review* 118, 1 (2015): 199-266.

18 Viscusi, Kip & Ted Gayer. “Behavioral Public Choice: The Behavioral Paradox of Government Policy.” *Harvard Journal of Law & Public Policy* 38 (2015): 973-1007.

research discussed by Viscusi & Gayer has found that court rulings often are biased against innovation. Furthermore, judges studied in a lab setting tend to favor the existing drugs with a known, higher risk when offered a choice between a new drug with uncertain risk and an existing drug. Another instance of ambiguity aversion is the regulatory approach to new drugs or new products with uncertain risks such as GMOs which places more weight on worst-case outcomes and assigns the burden of proof on the manufacturers.

“Another well documented behavioral bias is “ambiguity aversions,” which is people’s aversion to hard-to-estimate probabilities

Finally, people have been found to prefer avoiding losses to incurring gains. Viscusi & Gayer document this bias in the FDA regulatory approval process for new drugs: the FDA would rather approve a new drug which leads to modest health benefits but no harm than another drug which may lead to some harm but also to significantly more benefits (on net). This fallacy is compounded by how errors of commission (approving a drug which leads to harm) are weighted significantly more than errors of omissions (not approving a drug that could have led to significant benefits) as the losses are typically more visible in the case of errors of commission: patients who die after taking a dangerous drug are identifiable. In contrast, patients whose lives are lost because they failed to get the benefits of a promising new drug often cannot be identified.

B. Political Oversight and Regulation

In the spirit of public choice, Cooper & Kovacic (2012)¹⁹ posit a simple model of a regulator that serves as agent to a political overseer. The regulator balances two potentially competing goals: what she perceives as the optimal long run policy and the rewards she gets from her political overseer. This framework is then used to evaluate the effects of bounded rationality on policymaking and specifically on competition policy, given the experience of both authors at the antitrust agencies.

The article considers several behavioral biases. Overall, they find that flawed heuristics such as optimism (the tendency to underestimate one’s own probability of experiencing a bad outcome), availability (the tendency to highlight recent, particularly salient events), representativeness (the tendency to ignore the base line rate of an event), and hind-

sight (the tendency to overestimate the ex-ante probability of an event occurring, after it has occurred) are more likely to make the regulators adopt policies that are closer to the preferences of the political overseers, rather than optimal long-term policies. Even an unbiased regulator has an incentive to choose populist policies due to the political rewards that come from immediate action, especially with limited time horizons.

The effect of confirmation bias, i.e. the tendency to interpret ambiguous or even contradictory information as supporting one’s initial position, is more uncertain and depends on the existing status quo as well as on the order in which new information is received. The authors speculate that it may create a weak tendency to adopt politically expedient policies since the first evidence a regulator may view on a matter is a call to action by its political overseer. In the field of antitrust, for example, confirmation bias could lead enforcers challenging a merger to interpret documents from the merging parties that cast the merger in a competitive light as either neutral or supporting their view of the case.

As discussed *supra*, consumers and firms may correct in the long run their cognitive biases due to the pressures of the competitive markets. However, since such pressure does not exist for policymakers, Cooper & Kovacic argue that even a regulator with a preference for maximizing long-term social welfare will over time tend to focus excessively on short-term rewards, especially if suffering from certain behavioral biases. The authors then indicate several correcting mechanisms including a greater use of internal and external adversarial reviews and greater accountability through ex-post evaluations of previous interventions (or lack thereof).

05

WHAT ARE THE LESSONS OF BEHAVIORAL PUBLIC CHOICE FOR ANTITRUST?

What are the relevant lessons for reforming antitrust enforcement and potentially regulating the tech industry? The literature discussed above emphasizes the existence of certain cognitive bias among all people, including policymakers. Some of these biases seems particularly relevant for antitrust matters and, perhaps, especially for antitrust matters related to the tech industry.

¹⁹ Cooper, James & William Kovacic. “Behavioral Economics and Its Meaning for Antitrust Agency Decision Making.” *Journal of Law, Economics & Policy* 8, 4 (2012): 779-800.

For example, Cooper & Kovacic suggest that confirmation bias may lead the regulator to dismiss available evidence that counters a pre-existing view and suggest that internal adversarial reviews may be able to counter this problem. The authors suggest that the regulators could set up an internal “B” team whose role is to act as defense counsel; they also flag the FTC traditional approach of having the Bureau of Economics provide a separate recommendation from the legal counsel as one mechanism to implement this adversarial review. The authors do not discuss this, but perhaps such mechanism is more important when the economists, or staff as a whole, have a view that diverges significantly from the pre-existing view of the Commissioners. A policy implication of this view is that such mechanisms at the agencies should be created/reinforced and that “dissenting staff” should be given a fair hearing by management. Another implication not discussed by the authors is that perhaps the long run harm caused by confirmation bias is more severe when the pre-existing view of the regulator (or its overseer) is formed while evidence is scant and still developing.²⁰

“

Cooper & Kovacic suggest that confirmation bias may lead the regulator to dismiss available evidence that counters a pre-existing view and suggest that internal adversarial reviews may be able to counter this problem

A large share of antitrust enforcement is concerned with predicting the effects of current decisions on the future state of competition. As such, it is an exercise in risk assessment, weighing future losses and gains, often considering events with small probabilities. For example, acquisitions of potential competitors may involve all these factors. The literature discussed above suggests that enforcers may weigh potential losses, for example the loss of the “next-big-thing,” more than potential gains, for example due to

the combination of the innovation efforts of the target and the buyers. Similarly, enforcers may overestimate the likelihood of small probability events, such as the probability that a nascent competitor may become a powerful rival to the buyer in the future. Finally, ambiguity aversion may lead the enforcers to prefer a “certain” outcome today, such as maintaining the current status quo, to the uncertainty created by the acquisition.

Finally, the literature discussed above suggests that regulators may have a bias against innovation. Since innovation characterizes the tech industry more than other segments of the economy, one can read the behavioral public choice literature as cautioning against a new regulatory body which may institutionalizes a bias against innovation.²¹

06

CONCLUSION

Behavioral economics has found its place among the tools used by antitrust agencies and practitioners to evaluate the state of competition in the United States. While behavioral biases are often considered a reason for government intervention, antitrust scholars have suggested that the picture is more nuanced. Behavioral biases may often be resolved by market dynamics and the pressure imposed on consumers and firms to behave more rationally, i.e. not leave money on the table. However, this is not always the case; for example, when firms have an incentive to exploit consumers’ behavioral biases. A recent strand of research, behavioral public choice theory, adds further nuance to the debate suggesting that policymakers may exhibit the same behavioral biases as consumers and firms. And perhaps more importantly, that the dynamics of the political process may institutionalize such behavioral biases rather than overcome them.

20 For example, those advocating for more aggressive antitrust enforcement point to evidence of increasing concentration in the economy, increasing markups, a tendency by tech companies to acquire smaller startups to monopolize various markets, etc. A fair reading of the ongoing research, however, suggests that the evidence may not point unequivocally towards an increase in market power. While this is a vast debate that goes beyond this footnote, interested readers can review a recent article by Dennis Carlton which discusses some of the limitations of the research suggesting an increase in market power (Dennis W. Carlton. “How to make sensible merger policies?” *Network Law Review* (2022) available at: <https://www.networklawreview.org/carlton-mergers/>). Another recent paper suggests that the measured increase in markups may be due to changing technology rather than market power (Foster, Lucia, John Haltiwanger & Cody Tuttle. “Rising Markups or Changing Technology?” *CES Working Paper* 22-38.) Finally, we have recently documented that some of the assumptions informing a call to more aggressive enforcement may not be supported in the data (Asoni, Andrea & Grace Luo. “Mergers and Acquisitions in the Tech Industry: Are They Different?” *George Mason Law Review* (forthcoming))

21 Another unrelated strand of literature that identifies a potential bias against innovation is the “error cost” literature, which suggests that the cost of “false positives,” i.e. identifying a competition problem where there is none, are significantly higher in dynamic environments. (See, for example, Manne, Geoffrey & Joshua Wright. “Innovation and the Limits of Antitrust.” *Journal of Competition Law and Economics* 6, 1 (2009): 153-202.) Others have criticized the error cost approach in antitrust. (See, for example, Hovenkamp, Herbert. “Antitrust Error Costs.” *University of Pennsylvania Journal of Business Law* 24, 2 (2022): 293-349.)

Where does this leave us when it comes to the current debate over reforming competition policy and antitrust enforcement in the United States? It is probably a safe bet that both sides of the debate, those who want stricter enforcement and more regulations and those who see the other side as overreaching, see severe behavioral biases that may justify their position. And they may both be right! If so, the debate would benefit from a clear effort from each side to identify its behavioral biases and a careful read of the accumulating evidence to identify areas where progress can be found by both sides. If nothing else, behavioral economics suggests putting fast thinking aside and embrace slow thinking, careful research, and dispassionate reading of the available evidence. The debate will certainly benefit from additional insights and evidence from the behavioral public choice literature, especially on what mechanisms ought to be deployed to ensure that no biases affect the creation and enforcement of antitrust policy. ■

“*A prerequisite to develop the sustainable health ecosystem is healthcare professionals together with citizens taking the lead in technology as digital starts with human values and human needs*”

WHAT'S NEXT

For November 2022, we will feature a TechREG Chronicle focused on issues related to **Interoperability**.

ANNOUNCEMENTS

CPI TechREG CHRONICLES December 2022

For December 2022, we will feature a TechREG Chronicle focused on issues related to **Digital Services Act**.

Contributions to the TechREG 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 TechREG 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 "TechREG 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 in any topic related to competition and regulation, however, priority will be given to articles addressing the abovementioned topics. Co-authors are always welcome.

ABOUT US

Since 2006, **Competition Policy International** (“CPI”) has provided comprehensive resources and continuing education for the global antitrust and competition policy community. Created and managed by leaders in the competition policy community, CPI and CPI TV deliver timely commentary and analysis on antitrust and global competition policy matters through a variety of events, media, and applications.

As of October 2021, CPI forms part of **What’s Next Media & Analytics Company** and has teamed up with **PYMNTS**, a global leader for data, news, and insights on innovation in payments and the platforms powering the connected economy.

This partnership will reinforce both CPI’s and PYMNTS’ coverage of technology regulation, as jurisdictions worldwide tackle the regulation of digital businesses across the connected economy, including questions pertaining to BigTech, FinTech, crypto, healthcare, social media, AI, privacy, and more.

Our partnership is timely. The antitrust world is evolving, and new, specific rules are being developed to regulate the

so-called “digital economy.” A new wave of regulation will increasingly displace traditional antitrust laws insofar as they apply to certain classes of businesses, including payments, online commerce, and the management of social media and search.

This insight is reflected in the launch of the **TechREG Chronicle**, which brings all these aspects together – combining the strengths and expertise of both CPI and PYMNTS.

Continue reading CPI as we expand the scope of analysis and discussions beyond antitrust-related issues to include Tech Reg news and information, and we are excited for you, our readers, to join us on this journey.

Scan to Stay Connected!

Scan here to subscribe to CPI’s **FREE** daily newsletter.



CPI SUBSCRIPTIONS

CPI reaches more than **35,000 readers** in over **150 countries** every day. Our online library houses over **23,000 papers**, articles and interviews.

Visit [competitionpolicyinternational.com](https://www.competitionpolicyinternational.com) today to see our available plans and join CPI's global community of antitrust experts.

