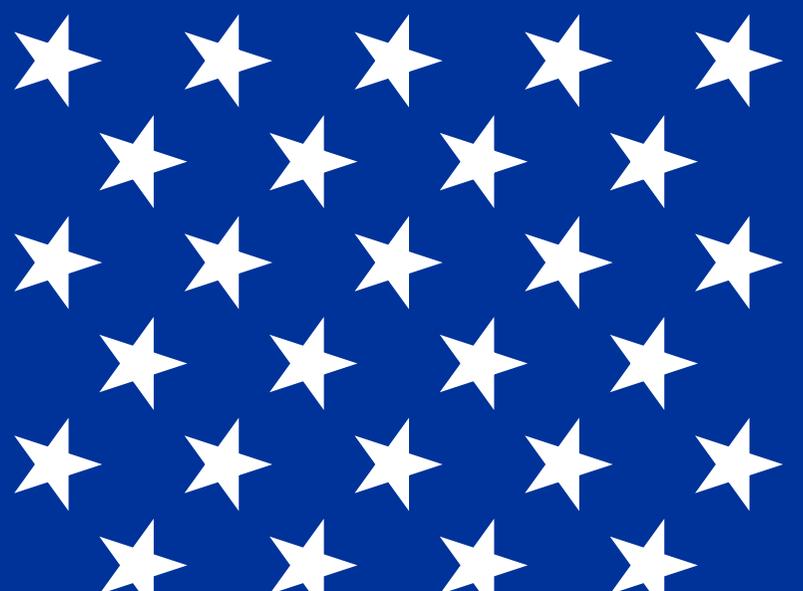




Digital Platform Regulation: Making Markets Work for People

Fiona M. Scott Morton



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Disclosure Statement

Before 2022 I consulted for Amazon for one year on competition issues and for Apple as an expert in its antitrust litigation against Qualcomm. Within the last three years I have consulted for only one digital gatekeeper, Microsoft. As of 2025, I am an economic expert in the UK for a group of users seeking damages from Meta and a group of advertisers seeking damages from Google. I have recently consulted in the US for Bard, Regeneron, Tapestry, SiriusXM and several electric vehicle makers. I regularly work as an expert witness for government plaintiffs on matters that are confidential.

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Preface

In late 2023 I realized that I had been writing about the economics of digital platform regulation for almost five years. All of the resulting articles began as conversations with friends and colleagues, many of whom continued those conversations as coauthors. The policy papers we wrote together were published in many different venues, according to type, topic, and urgency. The progression of the topics and solutions over time reflects several factors: my own learning, the progress of technology and platform business strategy, and most importantly, the passage and implementation of the Digital Markets Act in the European Union.

The regulation of the digital sector is now an obvious pressing problem for other countries, including the United States, as they confront risks to health, national security, democracy, business formation, competition, and inequality that are caused by the lack of almost any rules governing the conduct and strategy of corporations that run digital platforms. In developed economies like the US and Europe, when new technologies are invented and grow without the constraint of existing rules, elected governments regulate them to ensure corporate behavior meets the goals of society. This process has occurred for prescription drugs, air travel, broadcast television, mobile telecommunications, and more. A similar process is beginning again with digital platforms, but these are challenging technologies to regulate. The papers re-printed below explain why the project is difficult, but I hope they shed some light on how to get started in a productive way.

The different topics of the policy papers included in the volume arose naturally according to the problems of the moment and the needs of policy makers. While they were not written to be a series, I eventually realized that they could create a coherent narrative of how competition could be made to work in digital platform markets. This volume is the result. Thoughtful regulation of digital platforms can create and maintain more competition which will deliver the usual benefits of competitive markets: innovation, quality, low prices, and variety of choice for all trading partners.

This volume should be of interest to any policy maker with a role overseeing a digital businesses. PhD students and young researchers should also find it useful in giving them an overview of contemporary problems concerning the largest digital platforms and well as identifying gaps in the literature that need more research.

Acknowledgements

I want to thank the wonderful friends who participated in the first pandemic zoom ‘coffee’ that inspired this journey: Jacques Cremer, Amelia Fletcher, Paul Heidues, and Monika Schnitzer, as well as those who joined the group at a later date. All the coauthors who contributed to the papers re-printed here were motivational, generous, and full of valuable insights. I am grateful for their effort and participation, and for their permission to re-print our joint work. I am indebted to Jeromin Zettelmeyer for inviting me to be a Senior Fellow at Bruegel, which provided me with both a reason and a platform to continue writing about the Digital Markets Act. Gene Kimmelman gave wise advice and frequent support over the years without which the policy work here would not have occurred.

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Introduction

The markets created and dominated by the world's largest digital platforms lack competition. Many are monopoly providers in their markets. This problem is due in part to the conduct of the platforms themselves – as can be seen by many competition enforcement cases pursued against them – as well as structural factors such as network effects and economies of scale and scope.

But competition is necessary to make markets work for people. Without it, capitalism does not deliver value to consumers and workers, but only to the very richest in society. When competition fails, governments must step in to restore it, typically through competition enforcement or rules governing market behavior. If creating competition is impossible, governments typically regulate the price, quality, and activities of the business (think of your municipal water utility).

This book is about how a regulator might improve the rules of the market to create more competition in digital markets. That competition helps consumers and the small enterprises that interact with the core platform because competition gives them more choices among trading partners who may offer better value or variety. Competition reduces monopoly prices and raises monopoly quality which means it tends to redistribute surplus from a digital platform to trading partners like end consumers and complementors such as developers, sellers, or advertisers. For this reason, competition helps increase fairness. For the economist authors of the articles in this volume, fairness means that actors in the economy should gain from the value they create and bring to the market. Reaping the rewards of valuable, innovative activity stimulates investment and innovation and is therefore efficient and productive.

The volume begins with an economic analysis of fairness and contestability, the two goals of the Digital Markets Act in the EU. These goals are, however, broadly shared by many societies that run a capitalist economy and want to guide it so that it generates welfare for all actors in the economy, whether end consumers, workers, small businesses, or large companies. Much of the analysis in the book centers on the DMA because, at the time of writing, it is the only economic regulation of digital platforms in force in a large jurisdiction. The DMA sets out a list of 22 specific rules applied to seven gatekeepers (e.g. Google, Apple, Amazon). These rules include prohibitions against the gatekeeper, for example, combining personal data across services or preventing

business users from promoting rival distribution channels. Other rules are requirements for gatekeeper behaviors such as allowing business users offer rival app stores and digital wallets, or allowing consumers port their data to a rival. Some DMA rules require that the gatekeeper provide more transparency or offer access to rivals to its proprietary data. Gatekeepers are required to comply and explain to the regulator how they have done so in an annual report. Because of its pathbreaking nature and popular goals, analysis of the DMA is of broad interest around the world, particularly in countries considering their own regulation of digital platforms.

The articles in this collection describe the competition problem a policy maker is attempting to solve, and then use economic theory and evidence to explain how a regulation could better benefit consumers and society. The constraints of existing law, new laws, and legal process are critical to the practical and effective practice of economic regulation and so the articles often incorporate legal analysis in tandem with the economic analysis.

The research needed to give good answers to problems of regulation of digital platforms has only just begun. While the policy suggestions that follow rely heavily on that literature, much remains to be learned, and no doubt some of the conclusions below will need to be revised in light of new research. While the authors were constrained by the existing state of knowledge of digital markets, we applied timeless economic principles to reason our way step by step through the problems faced by today's regulators. Each article has the same basic format. We take a platform's incentives and abilities, identify the regulator's desired outcomes, and determine the market design and rules that would need to apply in order to achieve the desired conduct.

PART I.

Understanding the Digital Markets Act

The volume begins with an overview of the Digital Markets Act that explains it from the point of view of an economist. The article interprets the goals and the requirements of the Act using tools of social welfare.

Chapter 1.

Fairness and Contestability in the Digital Markets Act

September 6, 2023*

Introduction

According to the managerial strategy literature, a, if not the, key to large profits is the creation of “moats” that protect firms from competition.¹ Firms with market power create moats to maintain that power, and there exist strong incentives to develop new technologies that allow for broader and deeper moats. On the other hand, from a broader societal perspective, and particularly from the perspective of consumers, these moats often are harmful: they surround customers and deny them the opportunity to purchase from competitors. As a result, consumers suffer from the high prices and/or low quality imposed by the incumbent firm, whose incentives to provide the amount and type of innovation desired by consumers are decreased.

* Originally published as Jacques Crémer, Gregory S. Crawford, David Dinielli, Amelia Fletcher, Paul Heidhues, Monika Schnitzer, and Fiona M. Scott Morton, “Fairness and Contestability in the Digital Markets Act,” *Yale Journal on Regulation* 40 (2023): 973-1024.

1 José Antonio Marco-Izquierdo, “Profit Is Less About Good Management than You Think,” *Harv. Bus. Rev.* (Sept. 28, 2015) <https://hbr.org/2015/09/profit-is-less-about-good-management-than-you-think> [<https://perma.cc/B2V2-GF5K>].

Although the development of the digital sector in the last forty or so years has brought enormous benefits, it—as is well known and will also be clear from our analysis below—also creates natural moats and facilitates the creation of artificial ones. Therefore, all over the world, researchers and policy makers are discussing possible novel government interventions to promote the competitiveness of the economy. One of the most prominent recent examples is the new European regulation, the Digital Markets Act (DMA).² It is a complex piece of legislation that has led to a new set of obligations on a small number of the largest firms in the digital sector.

The two key and repeatedly stressed concepts underlying the DMA are those of “fairness” and “contestability.” It is therefore important to explore in depth the way in which fairness and contestability should be understood in the implementation of the DMA, particularly from an economic perspective. This clarification and explanation of the underlying economic foundations will be helpful in several ways.

First, it will help with the interpretation of the obligations that the gatekeepers must fulfill, described in Articles 5, 6, and 7.³ The DMA obligations are not always perfectly well defined; nor does it seem possible to define them ahead of time with sufficient precision and for every possible future application. A better understanding of the concepts underpinning DMA obligations may thus guide the Commission and the gatekeeper firms in their discussions about how to apply them. This understanding might also help the courts when, at some point or the other, a firm accused by the Commission of breaching its obligations under the DMA seeks judicial redress.

Second, the DMA provides in Article 8 certain processes designed to ensure that the gatekeepers’ efforts to comply with their DMA obligations in fact advance the DMA’s underlying goals. These “further specification” processes—available with respect to obligations imposed

2 Council Regulation 2022/1925, 2022 O.J. (L 265) 1 [hereinafter Digital Markets Act].

3 *Id.* art. 5-7. Article 7 mandates interoperability among “number-independent interpersonal communication services,” commonly known as messaging apps. We applaud the Commission’s inclusion of this mandate and urge it to continue consideration either of a broader interoperability mandate applicable to the core platform services of the gatekeepers or of additional sector-specific interoperability mandates. Unlike the title of Article 6, Article 7’s title does not include the phrase, “susceptible or being further specified.”

by Articles 6 and 7 but not those imposed by Article 5⁴—may be initiated by either the Commission or by the gatekeeper. In either case, the language describing the specification process makes clear that the goal is to ensure that gatekeeper compliance efforts match up with the purpose of the obligations, which is to advance fairness and contestability.⁵ A thoughtful understanding of fairness and contestability will therefore be important to the further specification process as well.

Third, the DMA describes when and how the Commission can and should update, modify, or supplement existing obligations. In all such instances, the DMA directs that changes to obligations are to be made in service of the related goals of fairness and contestability. For example, the Commission may reopen certain specification proceedings if the measures previously specified are “not effective” in advancing the DMA’s goals (i.e., fairness and contestability).⁶ Additionally, the DMA empowers the Commission to adopt “delegated acts”—essentially, amendments to nonessential provisions of a piece of legislation—if a market investigation has identified specific obligations that ought to be updated to address new gatekeeper practices that limit contestability or generate unfairness.⁷ Even decisions as idiosyncratic and specific as adding or deleting messaging app functionalities to or from the list of those covered by Article 7’s interoperability mandate must be made in with the purpose of advancing the twin goals of contestability and fairness.⁸ All of the amendment processes will be more predictable

4 Article 5 is titled “Obligations for gatekeepers.” Article 6 is titled “Obligations for gatekeepers susceptible of being further specified under Article 8” (emphasis added). The title of Article 7 specifies the particular subject of the Article—interoperability for messaging apps—but does not include the “susceptible of being further specified” language of Article 6’s title. Article 8, however, makes clear that the specification processes are available with respect to the obligations both of Article 6 and of Article 7, without any substantive or procedural distinction. See *id.* art. 8.1 (specifying applicability to articles 6 and 7); *id.* art. 8.3 (same).

5 If initiated by the Commission, the specification process may conclude with an implementing act describing what the gatekeeper must do “in order to effectively comply with the obligations laid down in Articles 6 and 7. See *id.* art. 8.2 (emphasis added). If initiated by the gatekeeper, the Commission may engage in a process to ensure the gatekeeper’s compliance efforts “are effective in achieving the objective of the relevant obligation in the specific circumstances of the gatekeeper.” See *id.* art. 8.3 (emphasis added).

6 See *id.* art. 8.9.

7 See *id.* art. 12.1.

8 See *id.* art. 12.3.

and effective when the basic concepts on which they rest are better understood.

The analysis we conduct will allow us to develop some policy prescriptions, which we summarize below. We will briefly discuss them as we go along and return to a more extended discussion in the conclusion.

Policy Recommendations⁹

- The DMA should clearly define contestability and fairness.
- The implementation of the DMA should focus on encouraging competition *in* the market and not just competition *for* the market.
- The platform economy leads to “unfair” outcomes when users are not rewarded for their contribution to the success of the platform. Regulation should aim at correcting this distortion.
- If well implemented, regulations based on the concepts of fairness and contestability can be favorable to innovation.

The Article provides more economic background for contestability and fairness, the two goals of the DMA. Before beginning our discussion, we should state a few preliminaries.

First, all the authors of this document believe that some form of regulatory response to the challenges posed by the digital economy is warranted. They may not, however, be in full agreement on the form that this response should take. Some of them believe that the creation of the Digital Markets Unit in the United Kingdom and the new German competition law provide attractive alternative models. We all believe, however, that a well implemented DMA is a step in the right direction—especially if the concepts of contestability and fairness are interpreted appropriately.

Second, all authors also believe that substantial dialogue between the Commission and the gatekeepers on how exactly to interpret the

⁹ The original version of this Article was written in 2021 during the debate over what the final text of the DMA should be; we are delighted that the final text of the DMA incorporated so many of our initial recommendations.

obligations that the DMA imposes on individual gatekeepers will be important. But the DMA gives the Commission substantial discretion in deciding how many and what issues to take up in the further specification process. We fear that the limited resources the Commission currently intends to devote to enforcement will lead to a less than optimal amount of dialogue not just in connection with the specification process but also in connection with dialogue that should occur around the gatekeepers' annual compliance reports and other matters.

Below, we repeatedly caution the reader that our conclusions depend on the quality of the implementation of the DMA, and it should be remembered at all times that whether the goals of the regulation can be achieved depends critically on its implementation. Our analysis is predicated on the assumption that the DMA will be applied to the handful of largest digital platforms.¹⁰ Some regulations would be unwise if applied generally, but have, we believe, positive consequences when applied to this select group. In particular, the extent of “unintended consequences” is likely to be lessened for this group.¹¹

II. Fairness and Contestability in the DMA

The terms fairness and contestability (or their variants) appear in the title of the DMA¹² and are used very frequently in its text. For instance, the recitals are twenty-six pages long and on only three of these pages

10 This expectation is based on the Draft Report on the Digital Markets Act, Committee on Internal Market and Consumer Protection of the European Parliament, presented by Rapporteur Andreas Schwab, which proposes to impose the DMA regulations on a smaller set of larger firms than the Commission proposed. See Draft Report of the Committee on the Internal Market and Consumer Protection, at 78-79 (June 1, 2021), https://www.europarl.europa.eu/doceo/document/IMCO-PR-692792_EN.pdf [<https://perma.cc/MCK7-YNEG>].

11 “Unintended consequences,” as used by economists, refers to undesirable or counter-productive consequences of laws or regulations that were not considered at the time of enactment. For instance, an unintended consequence of too strict a quality standard might be to increase production costs sufficiently that the product is no longer available to part of the population. Many of the regulations in the DMA are aimed at preventing the gatekeepers from building a moat around their consumers. Often, small platforms need to create a small moat to ensure viability and they should be allowed to do so. Only in very exceptional circumstances would the harm created by the enlargement of a moat by large gatekeepers be justified by compensating benefits.

12 The full title reads: “Regulation of the European Parliament and of the Council on *Contestable and Fair Markets* in the Digital Sector (Digital Markets Act)” (emphasis added). See Digital Markets Act, *supra* note 2.

do the words “fair” or “unfair” not appear!¹³ Moreover, and although they would seem to refer to different phenomena, “fairness” and “contestability” appear in the DMA nearly exclusively in conjunction with one another. The DMA offers a definition of contestability,¹⁴ and, separately, a definition of unfairness. Immediately following these definitions, however, the DMA explains the concepts’ relationship:

Contestability and fairness are intertwined. The lack of, or weak, contestability for a certain service can enable a gatekeeper to engage in unfair practices. Similarly, unfair practices by a gatekeeper can reduce the possibility of business users or others to contest the gatekeeper’s position. A particular obligation in this Regulation may, therefore, address both elements.¹⁵

It is plain, then, that effective implementation of the DMA requires an understanding of the concepts of fairness and of contestability, *and also of the additional meaning implied by the consistent invocation of the two concepts in conjunction with one another.* Recital 34’s express explanation of the relationship between the two concepts is a good place to start, but one also can find traces of a “model” of their relationships in the recitals. This model is schematically represented in Figure 1.

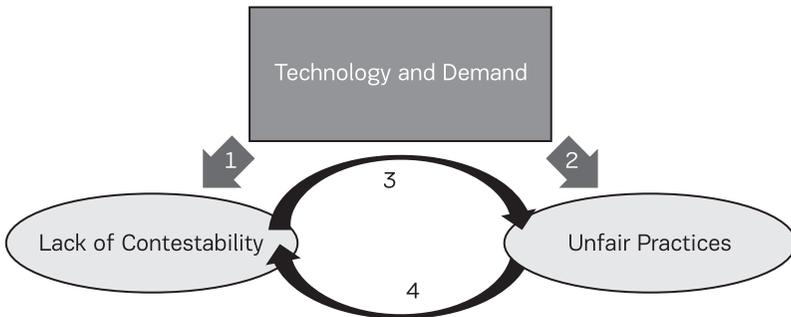


Figure 1. Model of Fairness and Contestability

13 See *id.*

14 See *id.* Recital (32) (“For the purpose of this Regulation, contestability should relate to the ability of undertakings to effectively overcome barriers to entry and expansion and challenge the gatekeeper on the merits of their products and services.”)

15 See *id.* Recital (34).

Let us start with Recital (13), where the Commission argues that the efficiency of having very large firms (increasing returns to scale) and the conditions of demand (network effects) make it impossible to have more than a very few providers of some services:

Weak contestability and unfair practices in the digital sector are more frequent and pronounced for certain digital services than for others. This is the case in particular for widespread and commonly used digital services that mostly directly intermediate between business users and end users and where features such as extreme scale economies, very strong network effects, an ability to connect many business users with many end users through the multisidedness of these services, lock-in effects, a lack of multi-homing or vertical integration are the most prevalent. Often, there is only one or very few large providers of those digital services.¹⁶

These relationships are represented by arrows 1 and 2 in Figure 1. Arrow 1 is wider than arrow 2: the main effect of the technology and demand conditions is to directly limit competition and contestability. But they also enable firms to implement “unfair” practices, such as unnecessarily restricting interoperability or multihoming.

The second step of the reasoning is represented by arrow 3. Because the markets are not contestable, the few providers are able to set terms that are unfavorable to their users; they take advantage of their market power. Again, from Recital (13), and on the model represented by arrow 3:

Those undertakings have emerged most frequently as gatekeepers for business users and end users with far-reaching impacts. In particular, they have gained the ability to easily set commercial conditions and terms in a unilateral and detrimental manner for their business users and end users.¹⁷

The situation, however, is a bit more complicated. Recital (16) states that the Commission should give priority in its enforcement efforts to core platform services (CPS) “*where unfair practices weakening contestability are most prevalent and have the most impact.*”¹⁸ We

16 *Id.* Recital (13).

17 *Id.*

18 *Id.* Recital (16) (emphasis added).

understand this to mean that the Commission believes that lack of contestability can also be caused by “unfair” practices of gatekeepers. This is represented by arrow 4 on the figure.

With the correct interpretation of contestability and fairness, this model, implied by the text of the DMA, is consistent with economic theory and what economists know about the economics of platforms. We caution, however, that inappropriate definitions of contestability and fairness will lead to misguided policy conclusions.

To choose well-targeted policies, it is important to distinguish between the lack of contestability that is due to the fundamentals of the technology and demand and the lack of contestability that is caused by the behavior of the platforms. For instance, lack of multi-homing can be due to the fact that users prefer to concentrate their activities on one platform, but it can also be due to contractual or technical characteristics chosen by the incumbent platform with the explicit aim of reducing competition. When it is the technology’s nature and demand that limit contestability, the regulator can promulgate pro-competitive interventions such as mandated interoperability;¹⁹ the regulator also can forbid “unfair” practices—but that requires a clarification of what the regulator considers fair and unfair. Our analysis of “fairness with respect to surplus sharing” in Section II.A will explain why this might lead to an expanded definition of something akin to “abuse of dominant position.” Intermediate situations can occur, where explicitly pro-competitive actions by the regulator are required to increase contestability: this can be, for instance, requiring data sharing, imposing interoperability, or changing choice architecture. We hope that our discussion below will help in this regard, as well as on the economic analysis and proper interpretation of contestability.

III. Fairness

We define fairness as the organization of economic activity to the benefit of users in such ways that they reap the just rewards for their contributions to economic and social welfare and that business users are

19 We discuss this concept further in another article in this special issue. See Fiona M. Scott Morton, Gregory S. Crawford, Jacques Crémer, David Dinielli, Amelia Fletcher, Paul Heidhues & Monika Schnitzer, “Equitable Interoperability: The ‘Super Tool’ of Digital Platform Governance,” 40 *Yale J. on Regul.* 1013 (2023).

not restricted in their ability to compete. We will show that, interpreted in this way, fairness is a useful concept that can guide policy in the right direction.

Before embarking on our discussion, we want to stress two points. First, the DMA stresses fairness to business users, but we feel that it can also be a useful concept when applied to individual consumers. Therefore, “consumers” or “end users” will refer to individuals who purchase goods or services for their own consumption, while “business users” will refer to individuals or entities who purchase them as inputs for some economic activity.²⁰ Second, we intentionally exclude from our definition of fairness more general issues of income redistribution or fair access to public services. These are very important issues, but the redistribution we cover in this Article concerns only digital platforms and their relationships with business users and end users.²¹

A. Fairness with Respect to Surplus Sharing

The text of the DMA does not propose a general definition of contestability or of fairness. However, in a discussion of access to software application stores Recital (62) explains:

Pricing or other general access conditions should be considered unfair if they lead to an imbalance of rights and obligations imposed on business users or confer an advantage on the gatekeeper which is disproportionate to the service provided by the gatekeeper to business users or lead to a disadvantage for business users in providing the same or similar services as the gatekeeper.²²

20 In fact, there is a continuum between end and business users: the smallest business users are presumably very similar to consumers in their limited ability to understand data confidentiality clauses, to find sufficient resources to investigate alternative sources or goods, etc.

21 We realize that this is an oversimplification. For instance, fair access to public services might require regulation of digital platforms. Although these are important societal issues, they are better treated elsewhere.

22 Digital Markets Act, *supra* note 2, Recital (62). The Recital goes on to explain a court could make a quantitative estimate of what is fair by giving various kinds of benchmarks:

The following benchmarks can serve as a yardstick to determine the fairness of general access conditions: prices charged or conditions imposed for the same or similar services by other providers of software application stores; prices charged or conditions imposed by the provider of the software application store for different related or similar services or

One could be tempted to argue that rights and obligations are not imposed on the users who freely join platforms, in the same way that price and quality are not imposed on firms that choose to buy this or that piece of machinery or consumers who choose this or that piece of clothing. But this presupposes that users have a realistic choice. It is worth considering the specificities of the economics that underlie the core digital services that the DMA aims to affect. These services exhibit strong network effects as well as (partly data driven) strong economies of scale. In markets with strong network effects, the benefit to users is determined by the product the firm offers as well as the number of other users adopting it. This is true independently of whether the network effects are one- or two-sided. In the case of app stores to which Recital (62) refers,²³ business users are attracted by the presence of end users and have only one means to reach them when there is a unique app store with single-homing end users.

Network effects, especially when coupled with strong economies of scale, severely limit competition: each type of platform service will tend to be provided by one firm, or, if with enough product differentiation, by a few firms. Network effects and economies of scale shield these dominant firms from competition, enabling them to extract a significant proportion of the surplus that their presence in the market generates. This contrasts with traditional markets with no (or only small) network effects in which firms can only extract surplus to the extent that they offer a better product than their rivals—otherwise, consumers will have an incentive to purchase from their competitors.

Although much of the economic literature has focused on network effects at the level of individual services, in practice, “platform services” are usually bundled with or offered alongside other products. Sometimes those are simple complementary products aimed at attracting consumers. For instance, a restaurant reservation platform will also offer an app to manage tables and reservations even if made on other channels. Often, these other products are themselves platform services.

to different types of end users; prices charged or conditions imposed by the provider of the software application store for the same service in different geographic regions; prices charged or conditions imposed by the provider of the software application store for the same service the gatekeeper provides to itself.

Id. Notice that without some clearer definition, one is left with little guidance on the ways these statistics should be interpreted.

23 See *id.*

There can be large benefits both from the viewpoint of the platforms and from the viewpoint of the users of such “horizontal aggregation”: simplified sign-in, consistent interface, sharing of data, and many others. However, this “gatekeeper effect” also reinforces incumbency advantage.

All these effects significantly change the analysis of whether surplus is shared fairly. In traditional markets, innovative firms generate large profits, and these profits are commensurate with the difference in quality between their products and those of their competitors. Public policy tries to ensure that these profits are sufficient to encourage innovation; for instance, patent policy provides a legal monopoly so that these profits are high enough.

The analysis of platforms that we have just sketched, and which is generally accepted by economists, leads to conclusions quite different from those derived from the analysis of traditional markets: a dominant platform can have a stable “monopoly” position and may generate profits far in excess of its contribution to society’s welfare.²⁴

To see this, assume that a new type of services is launched at a time in which there are two nearly identical platforms, with platform A being just slightly better than platform B. Users will, presumably, coordinate²⁵ on using A. Once they have flocked to A, it becomes much more valuable than B, and A, subject to low competitive pressure, can generate profits much greater than its contribution to the welfare of society. What is happening here is the following: platform A’s actual contribution to social welfare should be measured by the difference of quality between

24 Indeed, this analysis provided the conceptual framework of several recent landmark reports about competition in digital markets. See, e.g., Jason Furman, Diane Coyle, Amelia Fletcher, Derek McAuley & Philip Marsden, “Unlocking Digital Competition: Report of the Digital Competition Expert Panel” *Digital Competition Expert Panel* 54-56 (March 2019), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/785547/unlocking_digital_competition_furman_review_web.pdf, [<https://perma.cc/5485-ULZF>]; Mkt. Structure & Antitrust Subcomm, “Report,” in *Stigler Comm. On Digit. Platforms: Final Report*, Stigler Ctr. For the study of the Econ. & the State 23 (September 2019), <https://www.chicagobooth.edu/media/research/stigler/pdfs/digital-platforms--committee-report--stigler-center.pdf> [<https://perma.cc/8VMS-7VKC>]. Jacques Crémer, Yves-Alexandre de Montiove & Heike Schweitzer, *Final Report on Competition Policy for the Digital Era*, at 19 (2019), <https://ec.europa.eu/competition/publications/reports/kd0419345enn.pdf> [<https://perma.cc/5AQ2-KT76>].

25 Economists and other scholars have neither a good theory nor good empirical evidence on the way in which users choose to join this or that platform, and in particular on the obstacles that users face in coordinating on the better platform. Our conclusion is reinforced if they mis-coordinate on B.

the services offered by the two platforms.²⁶ Once users have joined A, its value to any individual user is equal to the sum of this difference in quality *and* of the value of belonging to the same platform as the other users. Because this total value is what users are willing to pay and therefore what the platform can “charge,” the platform’s profits are larger than its own contribution to social welfare.²⁷

We can rephrase this analysis in the following way. Users choose a platform in part because of the quality of the service, but also, and often mainly, because of the presence of other users. A large part of the value is therefore created by the users themselves. If they could coordinate their actions, they might be able to bargain with the platform and obtain a “fair” share of the surplus. In practice, however, they cannot, and the platform can impose conditions that reflect not only its own contribution to their welfare, but also those of the other users.

This point is important enough that it bears restating in yet another way. If the value of the platform to individual users increases less than proportionally to the number of users, any individual consumer adds very little value at the margin; similarly, one incremental complementary business user adds very little value to the platform. A single user can ask only for their own marginal contribution, whereas, if consumers banded together, they could ask for their average contribution which exceeds the individual marginal contribution.²⁸ In reality, consumers cannot coordinate to ask for their fair share of this surplus, and the platform will confiscate most of it. The platform does so by choosing terms and

26 One might make a similar argument if A were a monopolist because it had excluded competitor B. In that case, one might quantify A’s contribution to welfare as the difference between the quality of A and the quality of a hypothetical platform B that would operate in the market *but for* the anticompetitive conduct.

27 This point is misunderstood by some critics of regulation. They examine at some length the contributions of platforms to social welfare and argue that they are large. We fully agree on this point but disagree with the next step of their analysis. They assign all these benefits to the activity of the firm that manages the platform, whereas its contribution should be measured as the difference between the welfare generated by the way in which this firm manages the platform and the welfare that would be generated if the platform was managed by another (competent) firm. Clearly, this second measure is much smaller than the first. While making this point, we in no way want to underestimate the magnitude of the technological and business challenges that the largest platforms have overcome. It is a tremendous achievement to serve billions of users over the whole globe!

28 To this marginal analysis, one should add the fact that a threat by user of leaving the platform is not credible. This also lowers the bargaining power of the users.

conditions that extract not only its own contribution to consumer and user welfare, but also the contributions of the consumers and users themselves.

This analysis has important consequences linked to the notion of fairness. Classical economic theory teaches us that efficiency requires that firms receive rewards equal to the value of their contribution to the welfare of their clients. The “unfair” ability of platforms to charge more leads to inefficiencies. If the acquisition and stability of a dominant position is due to the coordination problem faced by users, charging a price equal to the users’ willingness to pay could be considered as unfair, or, in more technical competition policy terms, an abuse of dominant position. One sometimes hears defenses of the right of firms to charge high prices such as: “they built it; they can do whatever they want as long as they are not forcing anyone to use their services or buy their products. High prices or low quality of service raise no fairness concerns in the absence of anti-competitive or other forms of illegal behavior.” With platforms and network effects, this premise is invalid. Our definition of fairness reflects this by stating that users should “reap the just rewards for their contributions to economic and social welfare.” The platform is a cocreation of the platform itself and its users, who should not bear the brunt of their limited bargaining power.

Finally, arguments for high prices often rest on innovation: not only is it fair to pay firms for their innovations, but it is also indispensable if we want to provide them with incentives to innovate. The argument is reversed in the case of industries with network effects. There is a strong “first-mover advantage” and therefore, if anything, platforms have too much incentive to innovate to enter the market first. They will expend lots of resources in being first on the market. On the flip side, there will be too little incentive to innovate for the business and end users of the platform once users coordinated on a given platform. We discuss the issue of innovation at greater length in Part IV.

Many of the services offered by platforms are free in monetary terms, while the discussion above used prices for clarity. When, for some reason or the other, a platform has reached a zero price and cannot charge any lower, it may be expected to extract more surplus by degrading the quality of the service. As an example, think of search in which Google has a dominant position.

Consumers get the search results for free. Yet, comparing search

results now and those from ten years ago, users' experience is arguably downgraded by the fact that for some searches one sees predominately paid content (different kinds of advertisements).²⁹ Given the profitability of the search service to Google, one could reasonably argue that degraded search results violate fairness and therefore justify minimum quality requirements. For example, one could mandate that a webpage design must have at least 50% organic search results³⁰ and that the organic results should be not only clearly indicated but also placed at the left top corner in order to create the most benefit for English speaking users and others whose language reads left-to-right and top-to-bottom.³¹

B. Fairness of Contractual Terms

The surplus-sharing-related fairness objectives, which we have just discussed, contrast with other concepts of fairness used in European law. One concept of fairness, which we will call *fairness of contractual terms*, is defined, through its absence, in Directive 93/13/EEC of the Council of the European Communities,³² which forbids the use of terms in standard contracts that unfairly burden the consumer or are not clearly enough stated or are likely to surprise the consumer. This regulation applies to all firms, whatever the extent of market power as traditionally measured. In totally competitive markets, with totally rational consumers with no cognitive limitations, it would be useless: consumers would read all the terms of the contracts proposed by the different suppliers and would be able to carry out a well-founded cost-benefit analysis among the different offers. In practice, no consumer can do so. By listing a set of conditions

29 See Paul Heidhues Alessandro Bonatti, L. Elisa Celis, Gregory S. Crawford, David Dinielli, Michael Luca, Tobias Salz, Monika Schnitzer, Fiona M. Scott Morton, Michael Sinkinson & Jidong Zhou, "More Competitive Search Through Regulation," 40 *Yale J. on Regul.* 915, 968-69 (2023).

30 See *id.* at 949-55.

31 Many modern languages, by contrast, read right-to-left, including Hebrew, Urdu, Rohingya, and Arabic, a language used by approximately 1.7 billion people. Other languages, including some versions of Chinese and Japanese, can be written left-to-right or top-to-bottom. See Victor Kiprop, "Which Languages Are Written From Left To Right?", *WorldAtlas* (May 17, 2018), <https://www.worldatlas.com/articles/which-languages-are-written-from-right-to-left.html> [<https://perma.cc/B7GD-ZXFJ>]. Designs of search engine results pages that are intended to give prominence to organic results should take account of these language differences.

32 See Council Directive 93/13/EEC (Unfair Terms in Consumer Contracts), 1993 O.J. (L 95) 29 (EC).

that all contracts must satisfy, legal instruments such as the Directive offer contractual guarantees to consumers. When well designed, these types of obligations have efficiency-inducing consequences. First, they reduce the costs for consumers of examining the contractual terms associated with different services or obligations. Second, they handicap firms that try to compete by misleading or trapping consumers rather than through the quality of their products or services. In this case, “fairness” is the generic term, which has some intuitive meanings for consumers, used to describe general characteristics of legal contracts. Third, as consumers are better able to understand the different offers, they may spend more time comparing the products in the market and in so doing increase its competitiveness and its efficiency.³³

A striking consequence of the difference between this fairness of contractual terms and the fairness of allocation of surplus discussed above is seen in the fact that fairness of contractual terms is analyzed clause by clause. A contract can be a good bargain for the consumer, but one clause, for instance, limiting the rights of the consumers to take legal action, will not be binding because it is considered “unfair.” On the other hand, the allocation of surplus between consumers and sellers is explicitly excluded from consumer protection law. The European Council Directive 93/13/EEC “on unfair terms in consumer contracts” states in its Article 4.2 that “[a]ssessment of the unfair nature of the terms shall relate neither to the definition of the main subject matter of the contract nor to the adequacy of the price and remuneration. . .”³⁴ Because the regulation targets markets in general, the difference in the concepts of fairness makes economic sense. Absent the special economic features of core platform services, well-functioning competitive markets deliver efficient outcomes, and so this general type of unfair contract terms regulations—like regulations against misleading advertisements—aim only to facilitate the functioning of competitive markets through limiting the amount that consumers who do not check details can be exploited.

33 For a detailed exploration of this last point as well as an up-to-date discussion of the economic literature on consumer protection, see Paul Heidhues, Johannes Johnen & Botond Kőszegi, “Browsing Versus Studying: A Pro-Market Case for Regulation,” 88 *Rev. Econ. Stud.* 708, 712-25 (2021). See also Mark Armstrong & John Vickers, “Consumer Protection and Contingent Charges,” 50 *J. Econ. Lit.* 477, 478-492 (2012) (explaining the economics of regulating contingent charges).

34 Council Directive 93/13/EEC (Unfair Terms in Consumer Contracts), 1993 O.J. (L 95) 29 (EC), art. 4.2.

The general regulations on fairness of contractual terms will of course apply to gatekeepers, but there are two points that we want to highlight. First, these general regulations only apply to the relationship of firms to consumers. Because the imbalance of power between big tech platforms and most business users is similar to that between normal businesses and consumers, similar rules need to apply to gatekeepers in relation to their dealings with business users.³⁵ The economic importance of core platform services and the number of affected users, however, also imply that regulators might want to pay especially close attention to the fairness of terms of their contracts.

C. Fairness in Processes and Practices

A third aspect of fairness, *fairness in process and practices*, is close in spirit to fairness of contractual terms, but is more specifically relevant for gatekeeper platforms. As part of the services that they provide, platforms enact the rules that their users must follow when they interact; as such they have a role as “private rule makers” or “private regulators,” which organize the exchange between large numbers of users.³⁶ These private rules affect the efficiency of economic exchange but also the benefits of participation in the platform. Of course, platforms design the interactions on their platform to maximize their own profits, not social surplus. It is true that economic theory and the welfare theorem of general equilibrium theory yield presumptions that the search for private gains lead to efficiency in competitive markets. There is, however, no such presumption for monopolistic platforms and there might exist good reasons for putting regulatory restrictions on the business models that they deploy. Of course, the choice is not between regulation and no regulation: badly designed regulations lead to poor outcomes. The

35 To the contrary, one could argue that users, and specially consumers, interact repeatedly with the services offered by the gatekeepers, and therefore unexpected conditions, which standard consumer protection regulations try to control, are less likely to occur. This argument is counterbalanced by the fact that this frequency of usage makes the issue more salient for the largest gatekeepers.

36 See, e.g., Geoffrey G. Parker, Marshall W. Van Alstyne & Sangeet Paul Choudary, “Platform Revolution: How Networked Markets are Transforming the Economy and how to Make Them Work for You” 159 (2017)); see also Henri Piffaut, “Platforms, a Call for Data-Based Regulation,” *CPI Antitrust Chron.*, May 2018, at 1. (discussing this view); Crémer *et al.*, *supra* note 24, at 60-63 (discussing the implications of this view for competition policy).

proposed objectives in the DMA go (and economically should go) further than to just limit the unfair treatment of users through terms and conditions.

In the context of competition policy, Crémer and co-authors describe constraints that should be put on the rules of large platforms in this way:

[D]ominant platforms have a responsibility to ensure that the rules that they choose do not impede free, undistorted and vigorous competition without objective justification. The rules and institutions provided by a dominant platform must not anti-competitively exclude or discriminate. A dominant platform that sets up a marketplace must ensure a level playing field on this marketplace and must not use its rule-setting power to determine the outcome of the competition.³⁷

We believe that in the regulatory framework of the DMA, the concept of fairness can translate some of these requirements. There should be fairness in the sense of similar treatment of users who use the platform in different ways, and this is particularly important when those differences affect contestability. Hence, we support the following policies, with the important caveats at the end of this Section.

- There should be no discrimination between users who multi-home and users who do not multi-home.
- There should be no discrimination between users who compete with the platform in some dimension and those who do not.
- When the platform is also active as a user of the platform—for instance, when it is a seller on the marketplace it manages—it must treat its own activities at arm’s length.

Fairness of processes and practices also implies that the rules of the platforms and the way in which they are designed and enforced are communicated in a transparent, clear, and reasonable way.³⁸ The rules of

37 Crémer *et al.*, *supra* note 24, at 68.

38 See Amelia Fletcher, Gregory S. Crawford, Jacques Crémer, David Dinielli, Paul Heidhues, Michael Luca, Tobias Salz, Monika Schnitzer, Fiona M. Scott Morton, Katja Seim & Michael Sinkinson, “Consumer Protection for Online Markets and Large Digital

the platform should be transparent and clear. This should enable users to take more informed decisions and thereby help to make efficient decisions. The platform should provide well defined and easily accessible procedures to mediate disputes between users or to complain about the policies of the platform.³⁹ Rules that limit the ability of business users to complain to public authorities when the outcome or process is unfair should be forbidden.⁴⁰ Moreover, because of the exceptional importance of the core digital platforms and the inability of either businesses or individual users to avoid them at reasonable cost, users should not be excluded from the platform except under well-defined and restricted conditions and in accordance with fair and non-discriminatory procedures. Again, subject to our caveats below, because there are few or only imperfect substitutes to the core platform services of the largest gatekeepers, rules that limit the behavior of users outside of the platform (e.g., prohibition of disintermediation or the use of platform most-favored-nation clauses) should not be allowed.

Given the importance of data in the digital economy, the same general concept of fairness should apply to the treatment of data. Business users should automatically have rights over, and access to the data their business generates. Our aim is not to list all possible uses of the concepts of fairness in processes and practices, but to show that, well understood, they lead to reasonable policies. And indeed, some of these policies are present in the DMA or other regulations, such as P2B regulations or consumer protection regulations.⁴¹

Our support for the DMA regulations discussed in this Section comes with two caveats. First, these blanket “fairness” requirements should apply only to very large platforms. As we argue below, we do not think that there is much risk that applying them to the very limited set of gatekeepers targeted by the DMA will lead to major inefficiencies, and indeed, it is likely to increase efficiency. Even so, and this is our second point, we recommend that the DMA leave a possibility for operators of

Platforms,” 40 *Yale J. on Regul.* 875 (2023) (proposing that large platforms be required to disclose the methods used for ad targeting and large platforms be required to disclose approach to preventing sellers from engaging in illegal sales practices).

39 For some types of disputes, the Digital Services Act imposes regulations along these lines in its Article 18; these regulations apply to all platforms. See Council Regulation 2022/2065, 2022 O.J. (L 277) 1, art. 18.

40 See *id.* art. 5(d).

41 See generally Fletcher *et al.*, *supra* note 38.

core platform services to prove that a challenged practice has positive consequences in terms of fairness and contestability.

Finally, we should stress that we fully support the aim of the DMA regulation to increase the competitiveness of the digital industries, which we turn to next. However, the technology and the characteristics of demand that underlie many of these markets, including network effects and data-driven scale economies, may result in strong market power nonetheless. For this reason, the DMA, in its text and in its implementation, must enforce fairness in the sense of surplus sharing that we explained in Section II.A and not focus solely on increasing the contestability of digital markets.

IV. Contestability

We explained above that, as deployed in the DMA, the concepts “fairness” and “contestability” each presume the existence of the other and derive their meaning in relation to one another. Both concepts can be seen as having the same functionality as a dual-action dial; whenever one dial is turned up (or down), the related dial turns up (or down) as well. This is why: a practice cannot be deemed fair if it undermines contestability. Indeed, in the preceding Part of this Article, we defined fairness in such a way that it necessarily facilitates and encourages contestability.⁴² And for contestability to prevail and be sustained in any given market, that market must be fair; it must not, for example, provide undeserved substantive or procedural advantages to already dominant firms.

We therefore offer a definition of “contestable” that describes that set of conditions that indicate, generate, and preserve the sort of fairness to which the DMA is committed. We propose that “contestability,” as used in the DMA, should be understood as the ability of non-dominant firms to overcome barriers to entry and expand to the benefit of users.

42 See generally Part III, *supra*. A similar dynamic plays out in the context of consumer protection law, which aims to protect consumers from unfair or fraudulent practices. In doing so, consumer protections often facilitate increased competition, which generates additional, “bonus” benefits to consumers in terms of price and quality. In a separate Article, we discuss how labeling requirements, for example, do more than simply ensure that consumers know exactly what they are buying. They also sharpen competition along parameters the suppliers may have ignored when they could get away with “competing” by mislabeling their products (selling 60 ounces of milk and calling it a half-gallon, for instance). See Fletcher *et al.*, *supra* note 38.

A. The Importance of the Definition

We offer our definition not as a general definition to be used in the contexts of other laws, or other forms of analysis, or even while walking down the street with a friend discussing whether an upcoming football game is “contestable.” We do not vouch for the accuracy or sufficiency of our definition if used as an aid to expression or understanding of anything beyond the four corners of the text of the DMA.

This is important. Although the term “contestability” has become standard fare in competition policy, it is rarely defined. And because it has been used to mean different things in different contexts, there is a significant risk a reader or listener may think a writer means something other than what they intend to convey.

1. Contestable Markets as Seen by Baumol and Co-authors

It is fair to say that the notion of contestable markets has a bad reputation in a large part of the economic profession. Given the common use of this notion among policy makers and the legal profession, particularly in the United States, we feel it is worthwhile explaining its original meaning. This will provide some useful background on the way in which economists understand entry in markets, and also explain why we feel there is a need to redefine contestability so it can be used in the modern policy context.

The theory of the contestable market was developed at the end of the 1970s and the beginning of the 1980s by Professor William Baumol and his co-authors. In his very well-known presidential address to the American Economic Association, he summarizes it thus:

A contestable market is one into which entry is absolutely free, and exit is absolutely costless. We use “freedom of entry” in Stigler’s sense, not to mean that it is costless or easy, but that the entrant suffers no disadvantage in terms of production technique or perceived product quality relative to the incumbent, and that potential entrants find it appropriate to evaluate the profitability of entry in terms of the incumbent firms’ pre-entry prices. In short, it is a requirement of contestability that there be no cost discrimination against entrants. Absolute freedom of exit, to us, is one way to guarantee freedom of entry. By this we

mean that any firm can leave without impediment, and in the process of departure can recoup any costs incurred in the entry process. If all capital is salable or reusable without loss other than that corresponding to normal user cost and depreciation, then any risk of entry is eliminated.⁴³

If these hypotheses are met, entry should be very easy, because “[t]he crucial feature of a contestable market is its vulnerability to hit-and-run entry. Even a very transient profit opportunity need not be neglected by a potential entrant, for he can go in, and, before prices change, collect his gains and then depart without cost, should the climate grow hostile.”⁴⁴ As a consequence, any incumbent, even a monopolist, would not be able to use its position to increase its profits by imposing “unfair” conditions on its customers: “[A] contestable market never offers more than a normal rate of profit—its economic profits must be zero or negative, even if it is oligopolistic or monopolistic.”⁴⁵

The basic idea of the theory is very simple. Assume that there is space for only one firm in an industry, and that the firm sells at a price that is above cost. Then, an entrant could undercut the monopolist while still charging at least a little above cost and thereby conquer all the market. Recall the hypotheses in the Baumol quote above: entry is absolutely free, exit absolutely costless. The monopolist might react by decreasing its price. Then the entrant would exit, but—because entry and exit are assumed costless—it would have fully profited from the time in which it has succeeded in supplanting the monopolist. This implies in turn that the monopolist could not charge supra-competitive prices.

The theory can be expanded with some difficulties to the situation where a small number of firms, but more than one, was necessary to serve the market efficiently. It can also be expanded to the case where there are many products, but the market can still be served by a single multi-product firm. The existence of a “stable” economic equilibrium requires additional, and not necessarily natural, economic hypotheses. Exploring this issue generated a host of technically challenging questions.

43 See William J. Baumol, “Contestable Markets: An Uprising in the Theory of Industry Structure,” 72 *Am. Econ. Rev.* 1, 3-4 (1982) (emphasis omitted).

44 See *id.* at 4.

45 See *id.*

2. Criticisms

The theory of contestable markets was subject to virulent criticism as soon as it appeared. These criticisms focused on the fact that it requires extreme and totally unrealistic assumptions for its main results to hold. The interested reader can consult, among many others, the work of Marius Schwartz and Robert J. Reynolds⁴⁶ as well as that of Avinash Dixit.⁴⁷ They are summarized by William A. Brock:

The applied economist must handle [the theory of contestable markets] with care, however. Dixit (1982), for example, has argued that the economic conditions that must be present for perfect contestability to exist and hence for price sustainability to be the relevant equilibrium concept are extremely stringent: (i) all producers must have access to the same technology, (ii) this technology may have scale economies such as fixed costs, but must not involve any sunk costs, (iii) incumbents can change prices only with a nonzero time lag, and (iv) consumers must respond to price differences with a shorter lag. Baumol et al. (1982) argue that iii and iv are not needed if entrants can write firm contracts with consumers for delivery over some fixed period length t . In short, postentry oligopoly is irrelevant and strategic entry deterrence is impossible in a perfectly contestable market.⁴⁸

We will not try to unpack all this discussion, but the basic idea of all these criticisms is the same. It is never the case that entry is costless, and it is extremely rarely the case that the incumbent monopolist cannot decrease its price nearly instantaneously upon entry by a rival. If this is the case, entrants have no incentives to enter, unless they can recover all the costs that they have incurred to enter—which is, in practice, never the case. Other attempts have been made to salvage the theory: for instance, one could assume that, before even entering, the entrant could make long run contracts with customers so that it could not be undercut

46 See Marius Schwartz & Robert J. Reynolds, “Contestable Markets: An Uprising in the Theory of Industry Structure”: Comment, 73 *Am. Econ. Rev.* 488, 488-90 (1983).

47 See Avinash Dixit, “Recent Developments in Oligopoly Theory,” 72(2) *Am. Econ. Rev.* 12, 12-17 (1982).

48 See William A. Brock, “Contestable Markets and the Theory of Industry Structure: A Review Article,” 91 *J. Pol. Econ.* 1055, 1057 (1983).

by the incumbent.⁴⁹ There are at best very few cases, if any, where these assumptions are in any way realistic. There is also no empirical evidence that contestable markets provide a good guide to any industry. The early literature argues that the airline industry provides a plausible example, but the post-deregulation history of the industry does not bear this out.

It is fair to say that this theory of contestable markets is totally discredited in the modern economics profession. This does not invalidate the use of the term “contestability” in the DMA, however, where it is used in a totally different way. The definition which we provide above, and which we expand on below, attempts to reflect that usage in a way that has economic meaning.

B. Learning by Doing, Data, and Contestability

Up to this point, we have used static notions of the advantages that the incumbent platform holds, increasing returns to scale and network effects. Economists have long been also interested in more dynamic notions. Prominent among those is the notion of learning by doing:⁵⁰ as firms produce more, they become more efficient and their cost of production decreases. Therefore, the cost of producing in any year depends not only on the quantity produced during that year, but on the accumulated production of previous years.

The development of the digital industries has introduced another source of dynamic competitive advantage: data. The data that digital firms accumulate allows them to know their customers better and to provide them with better, more targeted services. In this case, it is not the cost which decreases with past production, but the quality of service that increases.

Obviously, these dynamic elements make the notion of perfectly contestable markets even more of a chimera. Entrants, by the very fact that their past production is nil, face a strong competitive disadvantage and the strategy of rapid entry-exit becomes totally untenable

49 See William J. Baumol, John C. Panzar & Robert D. Willig, “Contestable Markets: An Uprising in the Theory of Industry Structure: Reply,” 73 *Am. Econ. Rev.* 491, 491-96 (1983).

50 See, e.g., Kenneth J. Arrow, “The Economic Implications of Learning by Doing,” in *Readings in the Theory of Growth: A Selection of Papers from the Review of Economic Studies* 131 (F.H. Hahn ed., 1971).

C. Using the Notion of Contestability for Regulatory Purposes

As our brief survey of the theory of contestability has shown, there is no hope of gathering useful guidelines for public policy from the existing economics literature on contestable markets—its main focus has actually been to identify cases where no specific public policy is needed. We will therefore try to develop a way in which the concept of contestability can be fruitfully used by regulators.

The fact that the original theory of contestable markets has essentially no practical application does not imply that it cannot teach us anything of a conceptual nature. As Massimo Motta puts it:

[T]he contestable market theory has had the merit of underlining the role played by potential entry in constraining the market power of incumbents. It is now commonly accepted that a firm is unlikely to exercise such market power if it faces potential rivals that could rapidly and cheaply enter the industry.⁵¹

A credible *threat* of entry can therefore limit the profits of the incumbents and force them to offer better deals to their users, but the more rapid and cheaper the potential for entry, and the higher quality the entrant, the better. Making this threat more credible and more present will increase the competitiveness of the economy and the welfare of consumers. It will be obviously true in settings where there is entry, and it will also be true when entry is being prepared as the incumbents have incentives to behave in the interest of consumers. The threat of expansion by rivals already in the market can also play a similar role.

Therefore, the analysis of gatekeeper practices should concentrate on (a) prohibiting practices that make entry and/or expansion difficult while at the same time hurting the welfare of users; and (b) proposing proactive pro-competitive interventions that make entry of new platforms and expansion of small ones easier. This is what the definition of contestability that we presented above tries to achieve. Forbidding multihoming would in most cases fit this definition.⁵² Forbidding

51 See Massimo Motta, *Competition Policy: Theory and Practice* 75 (2004).

52 It is always possible to find examples in which an a priori anticompetitive practice has a pro-competitive effect. For instance, Robin Lee showed that when Microsoft entered the game console market where Sony was the incumbent, it benefitted from

investment in providing better services, all else equal, would not. We now turn to the task of showing that this definition of contestability can provide a useful lens to analyze digital platform regulation.

D. Competition in the Market and Competition for the Market

For analytical purposes, it is convenient to distinguish between competition *in* the market and competition *for* the market, although in practice competition between platforms may often be a mixture of these two types of competition.

Competition *in* the market is the traditional form of competition. For instance, car manufacturers compete with each other: they innovate, improve the quality of the cars they produce or decrease the prices at which they sell them in order to increase their market share and their profits.

Competition occurs at the margin—typically, from year to year, market shares vary up and down, increasing and decreasing slowly for each firm. Competition in the market can occur either because each consumer buys only one unit of the good, but there are many suppliers (think of houses); or because consumers purchase different brands that are produced by different suppliers (think of breakfast cereals).

Pure competition *for* the market occurs when the extent of returns to scale and the form of the network effects makes it likely that in the medium run the market structure is comprised of one or a very few competitors. Then, platforms compete to be present in the market. Market shares stay constant for a long time, with one firm controlling the market; an entrant can only succeed by attracting all the consumers and the migration of the consumers from one platform to the other will take place quite rapidly.

In our definition of contestability, “barriers to entry” refer to the

the fact that it could offer games which were exclusive to its platform: this encouraged players who wanted to play these games to purchase an Xbox. Lee summarizes his main finding thus: “[P]rohibiting exclusive arrangements would have benefited the incumbent and harmed the smaller entrant platforms.” Robin Lee, “Vertical Integration and Exclusivity in Platform and Two-Sided Markets,” 103 *Am. Econ. Rev.* 2960, 2962 (2013). Notice in this case that it is the entrant that benefitted from exclusivity. We believe that it would be only in very few cases that allowing the incumbent to impose exclusivity would be pro-competitive. On the other hand, the example in this case also shows that the entrant can be itself a large firm; in this case, the standard rule of reason reasoning should be applied.

difficulty of beginning to sell a competing service, what we also label competition for the market. Once entry has occurred, competition becomes competition in the market; “barriers to expansion” refers to the difficulty of attracting and retaining new users.

In the next two Sections, we discuss the measurement and the policing of contestability in the extreme cases of pure platform competition for the market and pure platform competition in the market. A discussion of how to apply our analysis follows.

E. Contestability and Competition for the Market

1. The Digital Economy and the Theory of Contestable Markets

As we have described it, the theory of perfectly contestable markets was developed by Baumol and his co-authors as a criticism of the widely held opinion among economists that increasing returns to scale was *prima facie* evidence for the need for regulation. The theory of network effects was still in its infancy, and the digital economy, in the modern sense, did not exist. This has not prevented the *language* of contestability from being used extensively in digital economy competition policy, but there has been very little research trying to adapt the *analysis* of perfectly contestable markets to situations in which there are network effects.

One such attempt is due to Daniel F. Spulber.⁵³ In the same vein as the early literature, which argues that increasing returns to scale does not preclude competitive outcomes as incumbents will fear entry, he argues that consumers will easily coordinate their migration to a superior entrant platform, and that this will create a fear of entry sufficient to discipline even monopolist platforms. A representative portion of his analysis is provided in the following quote (firms should be understood as platforms):

Consider the possibility that firms have different costs. Suppose that a firm is established in the market and is serving all consumers. Suppose also that it is costless for a consumer to switch to another firm. Then, a firm with a small cost advantage can enter the market and attract

53 See Daniel F. Spulber, “Consumer Coordination in the Small and in the Large: Implications for Antitrust in Markets with Network Effects,” 4 J. Competition L. & Econ. 207 (2008).

all consumers from the incumbent firm. The entrant with lower costs can offer a lower price that cannot be matched by the higher-cost incumbent. Every consumer will want to switch because they anticipate that all other consumers also will want to switch firms. Therefore, consumers know that they will obtain the same benefits from network effects at the new firm. This means that network effects do not provide a defense against a more cost-efficient entrant. Network effects on the demand side create benefits from a single network. However, other things equal, a small cost advantage is sufficient for an entrant to displace an incumbent.⁵⁴

In this quote, the benefit of the entrant is in terms of costs, but Spulber argues that the same conclusions hold for differences in quality, functionalities, and other aspects of competition between platforms. We find the same basic idea in the oft-quoted sentence, “competition is but a click away.”⁵⁵

For our purposes below, it is important to notice the difference between increasing returns to scale and network effects. In the traditional theory of contestable markets, consumers choose between purchasing from the entrant or from the incumbent. Each consumer chooses independently of the way the others choose. With network effects, the benefits that consumers draw from joining a platform depend on the choice of the other consumers. Economic theory provides us little reason to believe that consumers will be able to solve the coordination problem of moving to a superior platform, rendering the Spulber analysis irrelevant.⁵⁶

Economists do not have a good theory of the impediments to migration of consumers to superior platforms or of the ways in which they could overcome them, but the evidence is clear: market power

54 *Id.* at 257-58.

55 See, e.g., Miguel Helft, “Google Makes a Case That It Isn’t So Big,” *N.Y. Times* (June 28, 2009), <https://www.nytimes.com/2009/06/29/technology/companies/29google.html> [<https://perma.cc/DH8Q-LFKL>]; John Thornhill, “Social Media Users of the World Unite!,” *Fin. Times*. (Feb. 5, 2018), <https://www.ft.com/content/ea6c3a0c-0843-11e8-9650-9c0ad2d7c5b5> [<https://perma.cc/M8MV-4K8N>].

56 For a recent discussion of this point and related literature, see Gary Biglaiser, Jacques Crémer & André Veiga, “Should I Stay or Should I Go? Migrating Away from an Incumbent Platform,” 53 *Rand J. Econ.* 453, 453-457 (2022).

driven by network effects is stable in the digital economy. The winner-take-all aspect of competition for markets with network effects provides strong incentives for platforms to try to create barriers to entry to consolidate their positions.

2. Using Contestability to Analyze Competition for the Market

The competition problem is the following. Consider a type of social network that favors some type of communication between its users with network effects strong enough that they all want to belong to the same platform. An incumbent platform has degraded its quality⁵⁷ and failed to innovate, and a new platform enters that promise to fix these problems. It faces many difficulties. Probably the most challenging is the chicken and egg problem of attracting consumers. If network effects are very strong, the first consumers to join the new platform must take the bet that the others will also join afterwards.

Under this condition a natural theoretical measure of contestability arises: for platforms which offer “free” services, it is the difference of quality that the entrant must display to be able to enter and take the market.⁵⁸ If the platform charges for its services, one would have to take into account the difference in price. For simplicity, we will discard for the most part the role of price in this discussion, as it requires more steps: we would have to add to the value of the difference of quality an estimate of the price discount that the entrant platform offers.

In some cases, competition for the market can be a consequence not only of the underlying technology and demand conditions, but also of the institutional arrangements. For instance, if data are indispensable for developing a service, contestability will be very low if data are unavailable to the entrant. It is in the interest of the incumbent not to share its existing data. In that case the regulator must evaluate the

57 The quality which is relevant here is the permanent level of quality; that part cannot be easily reversed. An incumbent who has degraded quality by overloading its interface with ads could easily answer the threat of entry by decluttering upon entry, in the same way as we discussed when pointing out that the monopolist could decrease price when criticizing the theory of contestable markets.

58 Platforms that offer services for a non-cash price or in barter for personal data are generally financed through advertising. A complete analysis would take into account the effect on the advertising market.

relative benefits of mandating larger access to data, in some cases weighing them against other important societal aims such as privacy protection.

Although measuring contestability in competition for the market is quite difficult, it is not very difficult to identify practices that decrease it. For instance, the entry of new communication platforms is eased by multihoming. To the extent that many users are active on the new platform while also being active on the old platform, network effects are not significantly decreased. Thus, practices that restrict or eliminate multihoming on one or more sides of the market will reduce contestability when competition is for the market, without significant compensating benefits.

Encouraging competition for the market through regulation is potentially valuable, but also difficult for several reasons. It requires extremely good competition enforcement to protect nascent entrants as, by definition, these are small and technological trends are uncertain.

Furthermore, it is uncertain when a good moment will arrive for the overthrow of the incumbent dominant platform, as this may depend on a technology or demand shock that does not come as quickly as consumers would like. Finally, even if these transitions do occur regularly and incumbents are defeated, consumers are likely to bear significant switching costs at each transition between monopolists.

F. Contestability and Competition in the Market

Because of the powerful impact of network effects, consumers tend to join larger platforms, leading the market to “tip” to a monopoly. The moment when there are multiple platforms competing for the same set of consumers in the same market is often relatively short for this reason. Contrast this with our car example above: two car manufacturers can be present in the market and produce cars that are quite similar for an indefinite period. It is much more difficult for two platforms offering similar services to co-exist in the presence of network effects, as users will tend to flock to one or the other.

When we see multiple platforms existing at the same time, each with network effects, it is often the case that these platforms are offering something different and not competing head-to-head. For instance, social media platforms such as Twitter, Facebook, TikTok, and YouTube offer different services, such as delivery of commercial content, sharing

among friends, broadcasting short messages to the public, and so forth. Amazon and eBay compete for the business of some third-party sellers, but Amazon also has a retail function while eBay does not, and a parent selling used Legos from their attic is likely to list them on eBay. Competition may be very asymmetric when network effects are present and take the form of a large dominant firm facing a fringe of far smaller rivals.

A second reason that multiple platforms with network effects can co-exist in the marketplace is because a sufficient number of users multi-home—that is, users participate in more than one platform. Lyft and Uber compete in ride sharing partially because it is easy for riders to install both apps on their handset and quickly check the price of any given trip on both platforms before choosing one to use for that particular ride. Further, it does not matter to a user in a given neighborhood exactly which other neighbor is a frequent rider; anyone will create the liquidity that generates a positive externality. The same is not true in a social network where the identity of each user is critical.

We know less about the economics of competition between platforms because it is a relatively recent phenomenon and there has not been time to accumulate a large body of economic research. A growing formal literature, however, provides some insights. The consequences of network effects and increasing returns to scale are evidenced in the fact that multiple platforms in the market over time either must be engaging in different activities to maintain their shares or must have many users (enough to sustain network effects) engaging in multihoming or have interoperability. We offer the following tentative thoughts about the way in which the concept of contestability can help think about regulation of competition *in the market*.

Once several platforms are competing, each of them will have strong incentives to prevent the poaching of its users. The incentives to do so are stronger than in traditional industries. When a consumer decides to buy a car from firm B rather than firm A, firm B makes a profit on that sale and firm A does not. This is, of course, still the case in digital markets, but there are other important consequences. With network effects, the migration of a user from platform A to platform B makes platform B more attractive to the other users and platform A less attractive—this amplifies the direct profit consequences of the migration. At the same time, platform A loses access to data on

user A, and, as several authors have recently stressed, there exist data externalities: access to data on one user helps understand and predict the behavior of other users.⁵⁹ Therefore, the loss of data at the same time decreases the quality of the service offered to the other users by platform A and reduces its ability to profit from their consumers (with of course the opposite effect for platform B).⁶⁰

These added costs to migration of consumers raise problems for the contestability of markets, as gatekeepers have strong incentives to make it difficult for their users to leave their platforms (and there is an added incentive when they share information across services). Another issue can be that the few platforms in a market might have incentives to come to agreements, either implicit or explicit, to share the market and to raise jointly barriers to migration back and forth.⁶¹ The same types of obligations as in the case of competition for the market would be called for in this case: regulation should try to minimize the barriers to migration to another platform or to multihoming across multiple platforms. A common tactic used by competing digital platforms is to take control (perhaps by merger) of a tool used by one side of the platform that helps users multi-home.⁶² Once under the control of the (perhaps dominant) platform, the platform uses the tool to favor its own platform through greater functionality or interoperability, decreasing demand, liquidity, and quality of the rival.⁶³

A second tool available to a regulator to intensify competition in the market is to impose or encourage interoperability. Market-level interoperability causes network effects to shift from benefiting solely a

59 To the best of our knowledge, the first paper which made this point in the economic literature is Jay Pil Choi, Doh-Shin Jeon & Byung-Cheol Kim, "Privacy and Personal Data Collection with Information Externalities," 173 *J. Pub. Econ.* 113, 115-16 (2019).

60 The effects of increasing returns to scale are similar to those described in the text. When there is multihoming, similar effects would arise when a consumer decreases their intensity of the use of one platform and increases the intensity of the use of the other.

61 We should mention the very interesting and provocative, but we believe ultimately misguided, argument made by E. Glen Weyl and Alexander White that there is too little consolidation of platforms. See E. Glen Weyl & Alexander White, "Let the Right 'One' Win: Policy Lessons from the New Economics of Platforms," 10 *Competition Pol'y Int'l* 29, 40-48 (2014).

62 See generally Susan Athey & Fiona M. Scott Morton, "Platform Annexation," 84 *Antitrust L.J.* 677, 678 & n.1 (2022) (collecting examples and explaining how platforms have used this tactic to discourage multihoming, thereby protecting themselves from competition).

63 See *id.* at 682, 687.

proprietary platform (e.g., a social networking site) to accruing instead at the market level (e.g., email). Interoperability is a powerful tool that raises important issues, which we will treat in detail elsewhere.⁶⁴

We already argued that for several reasons encouraging competition for the market through regulation is difficult. It requires extremely good competition enforcement to protect nascent entrants; the cadence of the monopolist's replacement is uncertain and risky, and consumers bear significant switching costs at each transition. For these reasons, enforcement efforts aimed at digital markets should concentrate on creating or strengthening competition *in* the market. In that context, a regulator can more easily identify and monitor already active platforms rather than potential entrants, which is more administrable and further improves the regulatory and legal environment. Indeed, one way to interpret several of the DMA rules is that they attempt to do exactly this: transition more core platform services away from competition for the market by creating competition *in* the market. Certainly, there is scope for well-designed regulation, such as interoperability, to ease this transformation.⁶⁵

G. Some Practices Limit the Contestability of Several Markets

Our discussion has thus far examined the way in which practices limit the contestability of particular markets. This was done for analytical simplicity. But some practices can limit the contestability of several markets. A full discussion is beyond the scope of this Article, but we discuss an example below.

In the DMA, Recital (39) provides the background for Article 5.3, which forbids the practice that restricts the ability of business users to offer better terms to their users who have subscribed outside of the platform.⁶⁶ This practice is one of the leading issues in the current Epic v. Apple lawsuit.⁶⁷ To quote the Recital:

64 The authors of this Article are participants in the Digital Regulation Project (DRP), a collection of economists and policy experts. DRP participants published two papers prior to this one and the articles in this symposium, including an Article addressing interoperability as a tool to increase competition in digital markets. See Scott Morton *et al.*, *supra* note 19.

65 Encouraging competition in the market might also meet some of the concerns expressed by Weyl and White that network competition excessively limits the variety of platforms.

66 Digital Markets Act, *supra* note 2, Recital (39), art. 5(b)

67 See Epic Games, Inc. v. Apple Inc., 559 F. Supp. 3d 898, 936-40 (N.D. Cal. 2021).

In certain cases ...gatekeepers can restrict the ability of business users of their online intermediation services to offer products or services to end users under more favourable conditions, including price, through other online intermediation services or through direct online sales channels. Where such restrictions relate to third-party online intermediation services, they limit inter-platform contestability, which in turn limits choice of alternative online intermediation services for end users. Where such restrictions relate to direct online sales channels, they unfairly limit the freedom of business users to use such channels. To ensure that business users of online intermediation services of gatekeepers can freely choose alternative online intermediation services or direct online sales channels and differentiate the conditions under which they offer their products or services to end users...⁶⁸

Recitals 40 and 41 go further, discussing practices that prevent these business users from having a direct contact with their customers.⁶⁹

It is quite a common practice for stores and marketplaces to position themselves as a compulsory go-between in any communication between their users. This will become forbidden—the obligation is spelled out in Article 6.5.⁷⁰

Some platforms impose and enforce a requirement that business users communicate to their customers only through the channels the platforms have set up. Furthermore, they forbid offering different terms depending on the acquisition channel. These practices limit competition in several ways. First, they obviously limit the ability of business users to offer complementary services that compete with the platform's own offerings, in great part because they allow the platform to constrain what the business user can communicate to its customers through the platform. Second—and this may be less obvious—these restrictions limit competition from other platforms, both in the market and for the market. To see this, consider an end user who uses multiple apps on platform A, which forbids direct communications between business users and end users. Often the business users will be multi-homing while the end users will be single homing. When our end user

68 Digital Markets Act, *supra* note 2, Recital (39).

69 *Id.* Recital (40), (41).

70 *Id.* art. 6.5.

considers migrating to platform B, which competes with A, the end user has to take into account the fact that they will have to start anew their relationship with the apps that they use. For instance, information about past orders will be lost, as will information about badges earned in a game or information about the news they are interested in. This limits competition in the market, by adding costs of switching between established platforms. By the same token it also limits competition for the market by making entry of new platforms more difficult: business users and their clients on the incumbent platform will find it costly to “re-find” themselves on a competitive platform. For all these reasons, obligations that restrict this behavior seem reasonable, subject to the same caveats we expressed at the end of Part II. This should increase both contestability in the market and for the market.

There exist a substantial number of cases where preventing disintermediation is necessary to the business model of an intermediation platform, and for this reason, a blanket ban on such requirements for all platforms could harm competition and consumers. The DMA, however, will apply only to the very largest platforms whose activities are well entrenched, and, arguably not at risk from the imposition of such a requirement. Nevertheless, some of the authors of this report recommend an approach that allows a platform that shows that its “no disintermediation” practice advances fairness and contestability to be considered compliant. There are many other ways in which platforms can limit contestability by leveraging their dominance in one market into a competitive advantage in other markets, for instance through joint login procedures. We hope that the discussion above is sufficient to give a flavor of the way in which these practices should be treated.

H. Data Regulation and Contestability

In this Article, we have for the most part set aside the important issue of data. In Section III.B, we showed that the data accumulated by incumbent firms give them a competitive advantage, and that this is another argument for the inapplicability of the theory of contestable markets.

In Recital (72), the Commission points out that the hoarding of data can lead to lack of contestability and argues that data regulation can improve efficiency. It reads in part:

Ensuring an adequate level of transparency of profiling practices employed by gatekeepers ...facilitates contestability of core platform services. Transparency puts external pressure on gatekeepers not to make deep consumer profiling the industry standard, given that potential entrants or start-ups cannot access data to the same extent and depth, and at a similar scale.⁷¹

The mechanism that the Commission seems to have in mind follows. Gatekeepers can generate profits by degrading privacy and using data to target consumers better. In the absence of regulations, entrants accumulate as much data as possible to compete, but will always be disadvantaged on this score. Strong privacy regulations therefore decrease the benefits of incumbency, and there is a form of “double dividend” as more privacy is considered a good thing. As a consequence, the DMA includes strong provisions regulating the use of data by the core platform services of the gatekeepers.⁷²

A full discussion would take us too far afield, but we would like to make three points. First, the use of data has “pro-competitive” as well as “anti-competitive” aspects: with more data, platforms can better serve their consumers. Therefore, data regulation should not be focused on limiting the amount of data, but on ensuring that data is collected, treated, and protected appropriately. In particular, data should be, with proper protections, shared between service providers, as long as this is done for the benefit of users. Second, if privacy is valued by consumers, we would expect that platforms with better privacy protection would have a comparative advantage. In practice, this comparative advantage is lessened by the inability of users to assess levels of privacy protection, as well as the prevalent belief among users that because so much of their personal data is “out there,” extra effort to protect their privacy is worth little. These issues should be treated with a mix of regulations that control the use of data and increase transparency.⁷³ Policy proposals to enhance transparency around privacy are discussed in *Consumer*

71 *Id.* Recital (72).

72 Articles 5(a), 6.1(a), 6.1(h), 6.1(i) and 6.1(j) directly address data, whereas other provisions do so indirectly. See *id.* arts. 5(a), 6.1(a), 6.1(h)-(j).

73 The DRP’s article about online consumer protection offers a set of proposals intended to enhance transparency around privacy. See Fletcher *et al.*, *supra* note 38, at 23-25.

Protection for Online Markets and Large Digital Platforms, also in this Symposium.⁷⁴ Third, interoperability requirements are a potential tool to implement the right mix of data use and data protection.⁷⁵

I. The Limits of the Concept of Contestability

As we have shown, the concept of contestability is very rich and can provide a solid theoretical underpinning for policy analysis. It does not, however, provide a key to understand all regulatory issues. This partly results from the fact that, due to demand and technological constraints, contestability can be infeasible or only very limited. As we discuss in the conclusion, when this is the case, fairness regulation to limit the negative consequences of monopoly power is appropriate.

One also needs to take care not to focus exclusively on the contestability of existing markets. The concept is not a natural fit when it comes to the analysis of the creation and invention of new markets with new types of products. However, we believe that, alongside fairness, it can be adapted to this purpose. We turn to this task in the following Part.

V. Innovation

Recital (107) of the DMA states:

[T]he objective of this Regulation [is] namely to ensure a contestable and fair digital sector in general and core platform services in particular, with a view to promoting innovation, high quality of digital products and services, fair and competitive prices, as well as a high quality and choice for end users in the digital sector...⁷⁶

All the references to innovation are in the explanatory memorandum and in the recitals, and most are boilerplate assertions that unfair practices and/or lack of contestability are detrimental to innovation.⁷⁷

74 See *id.*

75 As previously mentioned, this symposium includes an Article discussing how interoperability can be used to improve the workings of various aspects of digital markets, including data use and protection. See *supra* note 64.

76 Digital Markets Act, *supra* note 2, Recital (107).

77 Exceptions are Recitals (57), which argues that lack of interoperability and access to some functionalities of operating systems are detrimental to innovation, and (59)

Yet, the way in which the proposed regulations impact innovation is critical to their performance. In addition to the value of innovation to consumer welfare, business users of the platform value the freedom to innovate and earn the returns from that innovation. Both will be controlled by the DMA.

A. Innovation and Regulation

Many critics of the DMA have focused on its effects on innovation. They argue that the hoped-for positive consequences of the DMA for the welfare of European consumers and the competitiveness of European firms will not materialize or, at best, be substantially reduced. These critics contend that the DMA will stifle innovation by the gatekeepers and by their competitors, as well as by the business users (for instance, the app developers) active on their platforms.⁷⁸ We agree that the problem of innovation is important—sufficiently important that it is right to situate its discussion at the center of the “theory” of the DMA. It is also clear from economic theory and empirical evidence, however, that the rather simplistic view often expressed by these critics that regulation is systematically and always antagonistic to innovation is incorrect.

To understand why, it is useful to review the arguments of the most prominent exponents of this view. Many of them, often with a background in strategy and management, explain that the largest tech platforms are hugely innovative, both technically and organizationally. We fully endorse this point. They, however, argue further that these platform’s profits are due to the value of the intellectual property (IP) that they have generated, and therefore that profit-decreasing regulation would decrease the incentives to acquire new IP, and hence the incentives to innovate. This argument is overbroad. We fully support the

which argues that lack of access to data can be detrimental to innovation. See *id.* Recitals (57), (59).

78 David J. Teece and Henry J. Kahwaty have recently written about the relationship between the DMA and innovation. Most of their analysis is focused on the Commission’s impact statement: they argue that it does not take sufficiently into account its consequences on innovation. Their own analysis of the consequences of the DMA on innovation is much more cursory and focused on identifying negative consequences. See David J. Teece & Henry J. Kahwaty, “Is the Proposed Digital Markets Act the Cure for Europe’s Platform Ills? Evidence from the European Commission’s Impact Assessment,” *BRG Inst.* 19-23 (Apr. 12, 2021), https://media.thinkbrg.com/wp-content/uploads/2021/04/11215103/Is-the-DMA-the-Cure_Teece_Kahwaty.pdf [<https://perma.cc/QT98-9P2X>].

idea that innovative firms should be entitled to the profits generated by their IP (when they comply with all other laws). As we have explained above and as the economics literature has made clear, however, the profits of platforms also stem from the fact that they are the nexus of network externalities. Regulating in a way that limits the excess benefits that incumbents draw from this situation has no reason to reduce innovation and could well increase it.

We will therefore turn to a more detailed discussion of the reasons we believe that, by increasing the contestability and fairness of the European digital sector, the DMA, *if well implemented*, need not decrease innovation and is likely to even boost it. Fairness can increase the rewards to innovation, and contestability can make it easier for innovative firms to compete. This will increase the innovation rents and therefore the incentive for innovation as well as affect its type and direction. We will stress that the proper interpretation of fairness and contestability can help make the DMA an even better instrument for the promotion of innovation by ensuring that gatekeeper innovation serves the public good, and by encouraging innovation from other firms in the ecosystem.

B. The Value of Innovation

Perhaps the defining characteristic of the digital sector is its pace of innovation and the tremendous benefits that it has generated for consumers. Indeed, a large macroeconomics literature has established the principle that by far the most important contributor to higher standards of living and consumer welfare is innovation. For example, an “old” case of the gains from innovation is the provision of artificial light. Light became both higher quality and cheaper over the decades as innovation moved society from candles, to kerosene, to a simple electric bulb, to LEDs.

The benefits that consumers derive from innovation by some of the gatekeepers, whose behavior the DMA will presumably constrain, are often in the form of quality innovation and new services. This is easiest to see whenever, as is common, consumers do not pay a monetary price for services, but it holds more broadly. Due to the importance of digital platforms as a source of innovation that benefits consumers, it is critical that any regulation in this sector should maintain or increase the pace of innovation.

One important concept to address at the outset of the discussion is the difference between the absolute level of innovation by today's platforms compared to the level of innovation we would see *if those platforms faced more competition*. It is the difference between the two that matters for regulatory policy.

C. Contestability and Innovation

1. Contestability and Investment in Innovation by Gatekeepers

It is certainly the case that gatekeeper firms have been and continue to be fantastic innovators. For example, Google made the wealth of information of the web easily discoverable and continues to innovate not only in search but in mapping technology, in artificial intelligence, and in many other directions. Apple invented the smartphone and continues to expand its functionalities. Again, the question is not whether the absolute level of innovation by today's platforms is high, but whether it would be higher *if those platforms faced more competition*.

A digital platform with no competitors has less incentive to invest in innovation to retain its customers than a platform that risks losing its customers to rivals. The second type of platform experiences "innovation diversion" in the sense articulated by Giulio Federico, Fiona Scott Morton, and Carl Shapiro.⁷⁹ While it is true that the promise of gaining profits from rivals spurs innovation, the promise of losing profits also spurs innovation; neither incentive is present for an entrenched digital platform without rivals. When contestability is low a monopolist's incentive to innovate is also lower than it would be in a setting where it had to innovate to retain customers.

The impact of lessened competition on innovation has recently gained attention in the merger context. Federico and co-authors survey the economics literature;⁸⁰ the topic is also discussed in the media for high-profile cases such as Dow-Dupont in Europe and Facebook-Instagram in the United States.⁸¹ There is less evidence on the innovation

79 See Giulio Federico, Fiona Scott Morton & Carl Shapiro, "Antitrust and Innovation: Welcoming and Protecting Disruption" 6 (*Nat'l Bureau of Econ. Rsch.*, Working Paper 26005, 2019), <https://www.nber.org/papers/w26005>, [<https://perma.cc/L83M-VSE2>].

80 See *id.* at 2-30.

81 See *id.* at 21, 48-49.

effects of breakups because breakups are rare. An investigation of the last breakup in the United States, the breakup of the Bell System in 1984, shows that it had a substantial positive long-term impact on U.S. innovation, more so than prior regulation.⁸²

Important innovation, however, is not specific to the largest digital firms. Smaller digital firms also spend a large amount of their revenues on R&D and conduct important innovation. Shopify is revolutionizing the way in which retailers can sell online while keeping direct contact with their clientele, and in so doing allows those retailers, among other things, to easily multi-home across Amazon.com and its competitors. In a few months, Zoom became a household name for videoconferencing, competing with such established products as Microsoft's Skype and Teams or Apple's FaceTime. Below, we explain why increasing the contestability of markets does not necessarily lower the incentives of gatekeepers to innovate, and why there are reasons to think it may well increase it by increasing the incentives of smaller firms and of entrants: when access to the consumers is blocked, there is little, if any, reason to innovate!⁸³

The preceding argues that contestability can trigger more innovation. It is also true, and important to notice, that the causality can run the other way. There is a positive feedback loop: innovation by smaller firms increases contestability by allowing them to develop new goods and services that compete with those offered by the gatekeepers.

2. Contestability and the Nature of Innovation

The quantity of innovation should not be the only concern of public policy makers—the type of innovation is also important. Incumbents have incentives to innovate in ways that limit the contestability of

82 See Martin Watzinger & Monika Schnitzer, "The Breakup of the Bell System and its Impact on Innovation" at 1, 13-37 (*Ctr. for Econ. Rsch.*, Working Paper 17635, 2022), <https://cepr.org/publications/dp17635> [<https://perma.cc/S2WC-K988>].

83 There has recently been a very lively debate among economists on the relationship between competition and innovation, to which it is impossible to do justice in this document. In the industrial-economics literature, the focus has been on the effect of mergers on innovation. For useful entry points in the literature, see Federico *et al.*, *supra* note 79; and Bruno Jullien & Yassine Lefouili, "Horizontal Mergers and Innovation," 14 *J. Competition L. & Econ.* 364 (2018). Because of the focus of the literature on mergers, it is difficult to draw firm conclusions about the effects on innovation resulting from the types of conduct that are the object of the DMA on innovation.

the market they control. This has a directly negative effect: making markets less contestable. It has also a less direct effect: displacing other innovations that could be better from the viewpoint of social welfare. In this Section, we expand on the relationship between contestability and the nature of innovation in ways that are detrimental to end users.

i. Innovation to Make the Markets Less Contestable

In all industries, the innovation of firms is aimed at creating better products and/or reducing costs, but also at reinforcing the market power that they possess. For instance, research will be aimed at discovering technologies that complement the product of the firm rather than general-purpose technologies. The same is true, and there is no reason why it would not be true, for digital industries.

It is practically impossible to regulate the direction in which firms will innovate, but regulators and competition authorities can influence the direction of innovation away from the creation of moats by making sure that the firms gain more by increasing the value to the consumers of the services they offer. A regulation that limits the value of moats, by, for example, imposing interoperability or making the migration of consumers to other platforms easier, will reduce the incentive to invest in innovation designed to increase market power through the creation of new moats or the deepening of existing ones.

ii. Innovating for Rent Extraction

Faced with vigorous competition for the market, even a monopolist or quasi-monopolist CPS would have incentives to improve its product with the objective to thwart entry. As competitive pressure decreases, the incentives to search for innovation designed to extract more rents from consumers increase. Think of an investment in a ranking scheme that promotes products that are, for some reason or the other, more profitable to the platform and less to the consumers.⁸⁴ This type of innovation

84 The UK financial regulator, for example, complained that Google does not prevent ads for financial “scam,” illustrating this by showing in a press conference that individuals who search for “high yield investments” are shown ads that promise unrealistic and clearly fraudulent returns such as “50 per cent in one week” or 15% income from “‘risk-free’ bond[s].” See Mathew Vincent, “UK Regulator Says Google Not Doing Enough About Scam Ads,” *Fin. Times*. (Sept. 24, 2020), <https://www.ft.com/content/ca700726-c48c-4132-953b-8d6a1e57f00c> [<https://perma.cc/J2ST-87H5>]. Although this is an extreme example, Google as a general matter benefits when advertisers can bid to profitable but low-quality or even dangerous or damaging products to consumers, including those consumers who may be vulnerable to such exploitation.

does not increase consumer surplus, but rather reduces it by converting it to producer surplus. With competition, rival CPSs that have better consumer offers create an incentive for an entrenched CPS to innovate to benefit consumers; if the incumbent does not, it faces a credible loss of its business to entrants.

iii. Innovation to Leverage Market Power

New technologies open opportunities for new services. Often, these services build on, and are complements to, existing services. Gatekeepers are well placed to take advantage of these opportunities when they build on the services that they offer. They understand the needs of consumers and of business users, have the technological expertise to develop the new services, and have the incentives to develop new services that make their existing services more valuable. They may, however, have both opportunities and incentives to develop these new services, and to adapt their old offerings, in a way that leverages their existing market power into these adjacent related markets. This will reduce competition in the new services and help them capture more rents; it may also widen the “moat” around their old services. The DMA recognizes this issue in several places by regulating interoperability and portability of data, as well as access to real time data.⁸⁵

Some writers complain that these types of obligations make innovation more costly and more difficult for the incumbent platforms, and hence will lead to a less dynamic economy. We agree that this cost does exist. On the other hand, the increased possibilities of innovation for third parties such as app developers weigh in the opposite direction. If this innovation is successful, it will not only *directly* benefit consumers but will also increase the competitiveness of the app industry in the long run, which will *indirectly* benefit them.⁸⁶

85 For instance, article 6.7 compels a gatekeeper to allow “business users and alternative providers of services provided together with, or in support of, core platform services, free of charge, effective interoperability with, and access for the purposes of interoperability to, the same operating system, hardware or software features, regardless of whether those features are part of the operating system, as are available to, or used by, that gatekeeper when providing such services.” Digital Markets Act, *supra* note 2, art. 6.7. This rule seeks to level the playing field and limit the ability of the gatekeeper to leverage into adjacent markets.

86 See Wen Wen & Feng Zhu, “Threat of Platform-Owner Entry and Complementor Responses: Evidence from the Mobile App Market,” 40 *Strategic Mgmt. J.* 1336, 1337-44 (2019). According to the authors of this paper, data show that app developers reduce

As a consequence, we are cautiously optimistic about the impact of the DMA on pro-competitive innovation, although we should warn that the consequences of the law will depend crucially on the way in which it is enforced by the Commission. This is one of the areas in which we think that a robust dialog between the regulator and the regulated firms is crucial.

D. Fairness and Innovation

If one begins with the observation that today's digital platforms capture the bulk of the surplus created by a combination of business users, end consumers, and platform functionality, then innovation incentives are also skewed. If regulation redistributes rents so that they are in closer proportion to each party's contribution to welfare, then innovation incentives will also be more balanced. When innovation incentives align with the social benefit of that innovation, then total innovation benefit to consumers will be higher. In this way, increased fairness can increase *innovation*.

Recall our analysis of fairness in surplus sharing and let us focus on what we will call complementors—the business users who provide services that complement those of the CPS's. The platform has little use or value if they do not participate. Consumers join the platform in order to enjoy its services. However, as we have shown, due to the way in which value is shared, consumers receive rewards that are smaller than their actual contribution and the platform will capture a large part of the value. Therefore, the complementors' incentives for innovation will be sub-optimally low.⁸⁷ If well implemented, the DMA will redistribute rents more in line with the value contributed by each side of the platform. This will tilt rewards towards complementors and increase their incentives to invest. The point was well illustrated by Horacio Gutierrez, Spotify's general counsel, during a Senate Judiciary Committee hearing: "Apple therefore has things exactly backwards when it claims that companies like Spotify are free-riding on Apple's

innovation efforts and increase app prices in response to threatened entry by Google. *Id.* at 1344-1360. We explore this concept in greater depth in the Article addressing interoperability. See *supra* note 64.

87 It could very well be that this is not true for some forms of innovation by the complementors, and a complete analysis of all possible cases is far beyond this Article. We believe, however, that our description is correct for the vast majority of possible innovation by the complementors.

innovations. It is Apple's success that rode in large part on the creativity of third-party app developers that created demand for Apple's devices.⁸⁸

Complementary businesses are more likely to be local to the platform users. For example, a dating app specific to a language or geography is more likely to have been created by a local entrepreneur, and employ local residents, than is the platform itself. Similarly, if brick and mortar retailers join a large e-commerce platform, those retailers may specialize in goods that their geographically local users want to buy. It is estimated that the gatekeepers subject to the DMA obligation will for the most part be American firms, whereas the complementors of these platforms will presumably be situated in geographies closer to their users. If the DMA increases innovation by complementors, some of that innovative activity will likely occur in Europe. This is an important objective given the relatively low innovativeness of European industry; furthermore, innovation by European firms may reflect more closely the tastes and needs of European users.

At the same time, these rules redistribute rents away from the CPS and this may reduce innovation (some of it exploitative and leveraging) by the CPS. More specifically, some of the DMA rules are designed to facilitate platform disintermediation. The impact of complementors disintermediating the platform will depend on how that disintermediation impacts the range of products consumers can choose from. For example, if disintermediation of the platform causes complementors to invent convenient and differentiated alternatives while the platform continues to operate, then consumer choice is increased. On the other hand, it is possible that disintermediation by the sides of the platform (e.g., contracting around the platform to avoid its fee) could cause an otherwise useful platform to fail to host transactions and, ultimately, cease operation. Less dramatically, it could make the platform less useful, for instance by making it less trustworthy or preventing a close integration of its functionalities. The loss of the platform as a competitor in the marketplace reduces choice and is likely a harm to competition and consumers. If disintermediation creates new products but causes the core platform to fail, then the impact on welfare becomes ambiguous.⁸⁹

88 See PBS NewsHour, "WATCH LIVE: Senate Judiciary Committee Will Hold Hearing Examining Competition in App Stores," *YouTube* at 49:15 (Apr. 21, 2021), <https://www.youtube.com/watch?v=EnCUmJvNlR0> [<https://perma.cc/46AV-B283>].

89 Many of the points of this paragraph are treated in more detail in our Article

Because we understand that the DMA will be applied to only a few very large platforms, at least initially, the ability to disintermediate is unlikely to cause these very large platforms to cease operations. They have well established brands and reputations, a range of services, and troves of consumer data. It seems more likely that the ability of complementors and end users to disintermediate the platform will provide the incentives for both platform and complementors to innovate and will give complementors more bargaining power in the division of the surplus.

Furthermore, the fact that complementors can capture a greater part of the profits might induce them to compete more aggressively with the CPS's own complementary products. This extra competitive pressure could also provide the CPS with more incentives to innovate.

E. Some Concluding Words on Innovation

Before closing our discussion on the relationship between the DMA and innovation, we want to stress that unfair competition by digital giants is very far from being the main causes of the lack of innovation of the European industry. Two of the three founders of Snowflake, for example, are European.⁹⁰ Despite that, they found it easier to develop their firms in the United States where the competitive pressure from “Big Tech” was certainly not any less. The causes of the lack of European innovation are, among other reasons, Europe's lackluster and often sclerotic university system, and the inflexibility of Europe's financial sector. Better regulation of the digital sector may increase digital innovation in Europe. But it should not distract from the important task of tackling the root causes of the lack of European innovation.

Innovative firms need better access to finance, and better returns for their innovative activities. A more united single market will facilitate access to consumers. European higher education and research need to be better financed and reorganized. Closer to the digital sector, reforms that, for instance, lead to better access to data for entrants and small platforms while preserving privacy would also be important.

addressing online consumer protection. See Fletcher *et al.*, *supra* note 38.

90 See *Snowflake Leadership*, Snowflake, <https://www.snowflake.com/leadership-board> [<https://perma.cc/ZSP2-FE74>].

VI. Conclusion

As we have stressed throughout this Article, the DMA is a good, albeit certainly not perfect, first step towards an improved regulation of the largest technology firms. Our aim has been to contribute to its development, by showing how the concepts of contestability and fairness can be defined in such a way as to provide a solid economic foundation for regulation of the digital industries, a regulation that would increase competition and be beneficial for consumers and for business users.

The definitions of contestability and fairness in the DMA make it easier to understand the obligations of the law and the results they are intended to generate. This in turn will aid gatekeepers in complying, regulators in regulating, and courts in adjudicating what behaviors are necessary for compliance. As discussed in Section II, the platform economy leads to “unfair” outcomes where users are not rewarded for their contribution to the success of the platform. Correcting this distortion through DMA regulations that change bargaining power and increase choice is therefore desirable.

We continue to stress that the implementation of the DMA should focus on encouraging competition in the market, and not just competition for the market. As we have discussed at the end of Section III, we think that competition in the market is a more realistic goal and leads to easier enforcement than a focus on competition for the market.

If well implemented, regulations based on the concepts of fairness and contestability can be favorable to innovation, especially to innovation by users of platforms. The knee-jerk reaction that any form of regulation will kill innovation by the large gatekeepers is unwarranted.

We have not discussed in any detail the important issue of how to enforce the DMA, which is probably just as important as the text itself for its success. We call on our economist colleagues to participate fully in that debate, alongside legal scholars.⁹¹ The issues of implementation, as, for instance, the proper degree of flexibility in the implementation of the

91 We have made an attempt to initiate this debate with a recent paper. See Jacques Crémer, David Dinielli, Paul Heidhues, Gene Kimmelman, Giorgio Monti, Rupprecht Podszun, Monika Schnitzer, Fiona Scott Morton & Alexandre de Streel, “Enforcing the Digital Markets Act: Institutional Choices, Compliance, and Antitrust” (*Tobin Center for Econ. Pol’y*, Discussion Paper No. 7, Dec. 1, 2022) https://tobin.yale.edu/sites/default/files/2022-12/Enforcing%20the%20Digital%20Markets%20Act_1.pdf [<https://perma.cc/SJ6B-P3V3>]

different rules, are not only legal, but also economic. The economist Jean Tirole has recently called for a “participative antitrust.”⁹² In the same spirit we should explore the possibility of “participative regulation.”⁹³

92 See, e.g., Allison Schrager, “A Nobel-Winning Economist’s Guide to Taming Tech Monopolies,” *Quartz* (June 27, 2018), <https://qz.com/1310266/nobel-winning-economist-jean-tirole-on-how-to-regulate-tech-monopolies> [<https://perma.cc/VZ2T-W8VW>].

93 This discussion would be more productive if we had better economics of the regulatory process, both at the theoretical and empirical levels. It is an extremely important topic, which is too often neglected in current economic research.

Chapter 2.

The Chicken-and-Egg Problem in the European Digital Markets Act

January 18, 2024*

The gatekeeper platforms regulated by the European Union's Digital Markets Act (DMA) must comply with the law as of 6 March 2024. The DMA requires that core platform services create and make available interfaces that allow business users to access end users via that platform at lower cost and on better terms. For example, app developers will have the right to distribute on handsets through different app stores, using different payment services, directing users to purchase content on the web and charging different prices in different channels. The gatekeeper must provide the application programming interfaces, or APIs, to enable business owners to take advantage of these rights.

However, the DMA does not define exactly what those APIs should be. Rather, the law requires a gatekeeper's interface to be "*effective*," meaning business users can use it to enter, compete and innovate. Because such a design is not, in general, in the interest of the gatekeeper, the input of business users to both gatekeepers and the European Commission is critical for evaluating compliance with the law. Thus far

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there is little evidence of platforms interacting with business users or putting out interfaces for evaluation by business users, or of business users offering comments on what interfaces would be best for entry and competition. It may be that the interface must come first and then its existence will stimulate entry of the new business users or investment into new services that will use the interface. Rather like the chicken and the egg, which should come first? Business users are needed to help create useful interfaces, while useful interfaces are needed to justify investment and entry by business users.

1. Introduction

The European Union's Digital Markets Act (Regulation (EU) 2022/1925) facilitates access for business users to the core platform services of large digital gatekeepers so that those business users can innovate and grow. However, successful enforcement of the law requires those business users to engage in the regulatory process to help define the interfaces they will use to access the platform. Under the law, the regulated platforms must develop the relevant technical specifications of the interface and share them with business users. An interface could be the APIs that, for example, allow a rival app store to function on a handset's operating system, a rival payment system to offer services to apps or a business user to obtain valuable data. This engagement by the business user is needed because the DMA requires that the interface be "effective" in order to be compliant with the law – in other words, the business user can run its business using the new interface. Without engagement from business users, it is difficult for the European Commission to evaluate effectiveness. If gatekeepers, which are the large, unavoidable platforms regulated by the DMA, design interfaces without such interaction, they may not be useful to existing and future business users. Flawed interfaces are less likely to increase contestability and fairness, which are the goals of the DMA. Effective interfaces are also necessary to maximise business-user innovation that benefits consumers.

The adoption of interfaces without sufficient input from business users seems at time of writing to be a substantial risk, given the limited progress to date and the rapidly approaching compliance deadline of 6 March 2024. Europe is home to app developers, merchants, video channels, news, banks, digital advertising services and other complements to the gatekeeper platforms. If these businesses wish to

be protected from the market power of digital gatekeepers and, indeed, obtain new opportunities to grow and innovate, they have a responsibility to engage. By the same token, the European Commission will need to deliver for these business users by requiring gatekeepers to be responsive to the legitimate problems they raise. The Commission will also need to protect business users who rationally expect retaliation (perhaps globally) from gatekeepers. Retaliation or lack of competence on the part of the Commission would severely limit the interest of business users in engaging in the process and would risk undermining the effectiveness of the DMA. Moreover, if few business users step forward with innovative plans, it will feed the narrative that Europe cannot innovate, not just in gatekeeper platforms, but in complements as well.

2. The Chicken-and-Egg Problem

The Digital Markets Act regulates business-user access to 22 core platform services provided by gatekeepers, so that those business users are able to connect with end users, are not burdened with costs and restrictions imposed by the gatekeeper, and can innovate in ways the gatekeeper may not prefer. In order to be sure each core platform service's interface enables business users to achieve those outcomes, it is particularly useful if they engage in the regulatory process to help define the interface. If an interface is not effective at achieving contestability and fairness, then the gatekeeper concerned is not in compliance with the law.

The interfaces defined by the DMA are not open to business users as a right today. Beginning on 6 March 2024, gatekeepers must make these interfaces available to business users. But because the interfaces are currently not available to business users, existing business users have not yet built products that will be accessible through the interfaces, and of course new business users have not yet entered and begun operation. This dynamic causes the following chicken-and-egg situation:

- An existing, functional interface enables the arrival of a business user.
- An existing business user must engage with the regulator to enable the arrival of a functional interface.

The second part of the conundrum occurs because the DMA provides no list of technical specifications or code that platforms must use to design their interfaces. The law uses regular English-language words to describe the rights the business user has and what the business user should be able to accomplish with those rights. Compliance is therefore defined not in a technical sense but in outcomes: can a business user effectively employ the interface to achieve the goal described in the rule? Compliance means the business user can enter and be functional. In addition, interfaces must not discriminate or be biased between business users, or between business users and the gatekeeper's own businesses.

Second, compliance is defined using the idea of effectiveness, meaning that an interface design that does not offer a full working solution to access the CPS is not compliant. However, such a practical definition creates a challenge for the bureaucrats enforcing the law. The regulator cannot determine if the interface complies by examining its code or technical features used. Nor can government lawyers know and appreciate the needs of entering business users, and whether the gatekeeper's proposed interface is designed to enable business users, is deficient in major respects, or subtly undermines rivals' competitive advantage.

3. Alternatives

There are two common alternative routes to regulating interfaces not chosen in the DMA. One approach is to specify in detail the technology to be used. Telecoms regulators have taken this path in many cases over the past decades, from phone jacks to the allocation of spectrum bands to standards for mobile telephony (Contreras, 2019). However, a difficulty with specifying technological solutions in the context of modern digital platforms is that it creates a heavy burden on the regulator. The regulator must become an expert in the technology of a particular core platform service, affirmatively describe the solutions it wants the gatekeeper to use and update them as technology changes. And that work must be carried out for each core platform service. The Commission would likely face difficulties in hiring enough qualified engineers to design so many interfaces, to say nothing of keeping solutions current as technology changes. Gatekeepers and business users would likely disagree regularly with the Commission's technical choices, and this would lead to argument and litigation. Providing the technical solutions in this way is simply not practical in light of the huge asymmetry of information and skills between gatekeeper platforms and Commission staff.

A second approach used for many technological interfaces is to rely on the work of a standard setting organisation (SSO). The SSO is comprised of a large group of stakeholders who decide by consensus on a common standard for the industry to adopt (eg electricity, 5G, Wi-Fi). Often there are many types of stakeholders in the SSO who have differing goals and incentives. For example, the standards adopted for mobile telecoms will affect handset makers, chip makers, equipment makers and carriers, among others. In addition, many of these parties have market power in their industries and/or proprietary technology they want the standard to include so they can earn licensing revenue. Any interested company can participate in an SSO as long as it abides by the organisation's rules. It can be difficult and slow for all these different parties with their different interests to agree on a common standard – and this can be inefficient when technology moves quickly. Furthermore, the choices of technologies included in the standard can be distorted by the economic power of certain members and the coalitions and compromises adopted in order to get agreement. For these reasons and others, the SSO approach to interface design is far from perfect (Bekkers *et al*, 2023; Simcoe, 2012; Farrell and Simcoe, 2012). However, it is an open, workable mechanism that allows industries to adopt technologies that require substantial coordination to deliver consumer benefits.

But importantly, the settings in which SSOs are used differ greatly from those addressed by the DMA. A designated gatekeeper under the DMA is a long-established monopoly or duopoly platform that business users need to access in order to reach end consumers. The gatekeeper alone has made technical choices and developed its interface over time. The gatekeeper's own capabilities, complementary assets and strategy have affected those choices. The interface is not a future technology for which no technical standards have yet emerged. A traditional SSO would be a committee of third parties, including some business users, tasked with designing the gatekeeper's interface. For this reason, the SSO approach to achieving contestability and fairness is probably not the least burdensome regulatory technique from the perspective of the gatekeeper. On the other hand, the business users who wish to connect to the interface are a heterogeneous group with different business and technical strategies, despite their common goal of creating an effective interface. This group might benefit from a structure similar to an SSO to help them coordinate and interact with both the gatekeeper and the Commission.

4. Fit with Market Structure and Technology

The advantages of the DMA include its recognition that the gatekeeper has the most knowledge of its own technology and the clearest view of its future plans for the development of that technology in light of current trends, and is therefore best positioned to develop APIs that function well. The law requires the gatekeeper to deploy an interface that business users can use to enter, compete and innovate. The DMA further regulates how the gatekeeper can use its interface to affect competition on the platform. For example, the rules prohibit bias in ranking and indexing. The gatekeeper is likely to find this approach less intrusive than the technical-specification or SSO options because the gatekeeper retains control over its own technology and can make efficient choices, while adhering to the requirement that the resulting interface be functional for the business user.

However, this discussion makes it clear why the regulator needs engagement from these business users in order to know what to look for in the interface, what questions to ask of the gatekeeper, and the importance to place on different elements of compliance. In addition, there is the problem of the valuable and innovative business users who are at an early stage of development and are therefore difficult to help. Of course, many business models will be straightforward and predictable. It is very likely, for example, that gaming and dating apps want to use rival payment services, and banks want to enter their own digital wallets. However, successful DMA enforcement will stimulate creative new ideas from business users that may not be obvious currently. The business user's role, therefore, is to engage with the gatekeeper, provide feedback to the gatekeeper, inform the Commission about problems or trade-offs in the gatekeeper's proposed solution and provide technical information to Commission staff, who must have compliance conversations with the gatekeeper. Without the regulator and the business user community functioning together, the resulting interface is likely to be flawed, and possibly not very useful for entrants.

It is this last step that seems to be a shortcoming in the design of the DMA. There is no instruction in the law that lays out how a gatekeeper must communicate to current or potential business users, nor is there any timetable of when these communications must occur.¹ Waiting

1 For example, the UK Competition and Markets Authority provides a process description in some instances; see CMA (2022), page 40.

for business users to appear has the drawbacks described above. And because asymmetry of information is severe between gatekeepers and business users, any unsupervised negotiation between them may not result in outcomes that are sufficiently contestable and fair.

5. The Cost of Risk and Delay

The concern that this negative feedback loop will cause risk and delay is first order. Gatekeepers have no financial incentive to provide the kind of interface for business users that would facilitate entry and competition—which would lower gatekeepers' profits. Therefore, only robust oversight by the Commission, in combination with information from potential entrants, is likely to establish the right conditions for timely entry. To launch on 7 March 2024, a business must have already worked out its strategy, developed a revenue model, designed its code based on technical information from the gatekeeper, and so forth.

Suppose, for example, that a rival app store wishes to launch on iOS and Google Android, both of which are regulated core platform services. For the entering store to develop its software for review by the CPS, it must be told the technical specifications of the interface the CPS will be adopting. The CPS may also want to undertake a security review of the entering app store and closely examine its code and technology. But for that to happen, the code must be written. Supposing the entrant has its technology created and is ready to enter: Can it offer its product for use by consumers and expect the store to function, or will the CPS require a review of the rival's corporate governance, insurance policies, data storage practices and the like? If CPS wants to carry out such a review to protect consumers, this will take time, and an entrant that is otherwise ready will want to start the process before March 2024. Other issues of interest to the business user will likely include features and functionality of the interface, such as what authorisation is needed for the store to be sideloaded. If the CPS does not want to develop safe sideloading, will the CPS carry the rival store within the legacy app store or in some other channel? Legacy stores engage in automatic updates and allow a user to keep track of subscriptions; the APIs for these features must be made available and equivalent for entering app stores so that their service is comparable. The gatekeeper could make any of the parameters above unworkable, slow, expensive or biased—which would constitute noncompliance with the DMA. But if the regulator does not understand

the existence or extent of the noncomplicance, it cannot effectively take action against it.

The entering business user may need to seek funding from banks or venture capitalists if it is not part of a large corporation with enough free cash flow to fund its entry costs. The providers of capital will engage in due diligence and evaluate the risk of the project. There are the usual risks inherent to new businesses, such as the competence of management and demand for the service. But venture capitalists will also consider the risk of a new business losing access to its end consumers—because the business must access those consumers through the gatekeeper’s interface. On top of standard business risk, the entering business will need to manage the risk that the interface will be biased, will fail to include some technology or even will not exist. Good enforcement would reduce or eliminate those risks. VCs will therefore evaluate the DMA, its legal strength and the competence of the enforcing authorities.² If sources of capital are deterred by regulatory risk, then entrants who should be helping the Commission ensure a working interface may simply fail to exist (Krueger *et al*, 2020; Hail and Leuz, 2006).

Of course, the Commission could simply wait until after the deadline to see if what the gatekeepers themselves create results in successful entry. If at that time no entrants appear, the Commission could then engage with business users to find out why they have not entered. A conceptual problem with this approach is that some of the missing business users will be entrepreneurs who will not exist until the interface creates conditions conducive to investment. Second, if the gatekeepers have complied according to their own definitions and that compliance is simply not useful to potential entrants, the DMA and the Commission will look ineffective or incompetent. At that point the steps needed to implement a useful interface will likely take another year, given the time needed for a regulator to evaluate existing compliance, interact with technical and business experts, communicate with the gatekeepers and then wait for the engineering cycle to repeat. Third, a delay of this type, in addition to failing to change fairness and contestability, weakens trust in the law. This, in turn, impacts business users’ incentives to invest, as noted above. Uncertainty about whether

2 For a practitioner perspective, see Dannemiller *et al.* (2017).

the regulator can deliver on usable interfaces lessens the ability of new entrants to raise capital and innovate.

6. Interpretation of Lack of Entry

The DMA requires each gatekeeper to report, six months after designation as a gatekeeper and annually thereafter, on “the measures it has implemented to ensure compliance with the obligations laid down” in the DMA (Art 11(1) DMA).³ Among many other things, gatekeepers must use the template established by the Commission to report on business user entry in each of their core platform services. For example, the template instructs gatekeepers to report:

(2.1.2(r)) “...depending on the circumstances, data on the evolution of the number of active end users and active business users for the relevant core platform service and, for each relevant obligation, the interaction of end users with choice screens and consent forms, the amount of in-app purchases, the number of pre-installed defaults as well as yearly revenues from payments related to those pre-installed defaults, counts of end users who switch, counts of business users who obtain data access, etc.”

and

(2.2) “A list of the Undertaking’s core platform service’s top fifteen (15) business users per core platform service based on revenues established in the EEA for the last year...”

Gatekeepers may be concerned that if there is no entry in a CPS, this fact will be used to demonstrate noncompliance. However, such a strong conclusion might not be warranted because entry requires action from two parties, both the gatekeeper and the entrant. Therefore, lack of entry is, alone, not proof of gatekeeper noncompliance. Rather, it is useful evidence because it creates a one-way flag. If entry has occurred, then clearly the interface works at least at some basic level. By contrast, if there is no entry, this is a concern that requires the regulator to follow up and find out why business users are absent.

3 See ‘Template form for reporting pursuant to Article 11 of Regulation (EU) 2022/1925’, European Commission, 9 October 2023, <https://digital-markets-act.ec.europa.eu/system/files/2023-10/Article%2011%20DMA%20-%20Compliance%20Report%20Template%20Form.pdf>.

The first possibility is that there is no interest in entry on the part of business users because the opportunity is not profitable. However, if the European institutions responsible for the DMA engaged in appropriate research to design the law, and successfully responded to concerns of business users, then it seems unlikely the DMA would identify core platform services where access is not, in fact, demanded by business users.

A second possible explanation for a lack of entry is that the business users are interested but are waiting until the uncertainty around enforcement of the DMA is resolved before investing. Business users may not want the risk of spending money on a project that depends on a new law with a new method of enforcement. They may be concerned the interface they need won't work well enough to support a viable business. Enforcement might deliver a basic interface and the rules for using it in March 2024, but this will only serve as a start to negotiations between business users and gatekeepers. Innovative entry will have to wait until the next engineering cycle, after these negotiations have taken place.

Worse, business users may not trust that the Commission will be able to execute this law at all. The required interface may not materialise. The Commission could be outlawyered or outmanoeuvred by the gatekeepers so that – despite the provisions in the law that try to protect against this outcome – both the Commission fails to enforce and courts do not mandate the required interfaces. Business users fearing this outcome will be reluctant to invest until they see proof of working interfaces.

Possibly business users will not have entered because they are afraid of developing a business that will compete with the gatekeeper, or are afraid of engaging with the Commission to critique the gatekeepers, because they expect retaliation from gatekeepers. For example, the Commission might share the concerns, meetings or filings of such business users with the relevant gatekeeper. This might be necessary to explain the needed improvements or demonstrate demand for them, or it might be considered necessary as part of the rights of the gatekeeper, which could face a noncompliance proceeding if it fails to respond. However, in either case, sharing the information may expose the business user to retaliation. That retaliation may be subtle or difficult to measure. Its cause may be impossible to assign with certainty and may occur outside the European Union. The possible insufficiency of existing protections for complainants is a serious concern. Relatedly, if

the business must seek permission from the gatekeeper to enter, and this requires the entrant to share technical information, its business could be copied by the gatekeeper or discriminated against. In this case the business user would have invested without gaining anything, and indeed would be harmed by participating.

A group that deserves analysis is existing gatekeepers who may be considering entering against other gatekeepers. Many gatekeepers have smaller businesses that compete with a designated CPS, or they have the assets needed to build a rival and enter. The DMA will lower the costs of entry or growth for these rivals as well. However, gatekeepers may assess the potential for entry and decide that they are better off with mutual forbearance. For example, suppose gatekeeper X has core platform service A designated under the DMA, while gatekeeper Y has core platform service B. If gatekeeper X aggressively enters or expands a business to compete with B, it may trigger a response from gatekeeper Y in core platform service A, where it may choose to enter or make increased investments. The resulting intensified competition in both CPS A and B could lower overall profits for both gatekeepers. This, of course, is exactly what the DMA is supposed to do. There are many possible entrants of this type: Meta in e-commerce and app stores; Amazon in app stores and handset design; Microsoft in search and app stores; Google in e-commerce; Apple in search and digital advertising. These potential entrants or smaller rivals may not wish to raise the competitive intensity of their interactions with other gatekeepers, but rather continue to ‘stay in their lanes.’

7. Possible Solutions

There is not much time to improve enforcement before the deadline. The DMA may simply have been designed in a way that requires several years of iteration before consumers can expect to see the effective opening-up of gatekeeper platforms and increased innovation.

However, the Commission should do whatever it can under current law to protect business users who engage in the regulatory process. For example, the Commission might avoid reporting to the gatekeeper concerned complaints from named business users, but might find alternative methods to provide legal security to both sides. The Commission should also make clear the extent of business user protections so that business users are not harmed by choosing to engage,

as such experiences will reduce engagement from other business users. If legal obligations need to be tightened up in order to effectively protect business users under the DMA, the Commission should not hesitate to do so using the power to adopt delegated acts that it is granted under Arts. 12 and 49 DMA.

The DMA prohibits retaliation by gatekeepers against business users under Article 5(6) (and further explained in Recital 102). It would be helpful for the Commission to explain how it plans to enforce in this area, perhaps clarifying how the regulation applies depending on the geographic location of the retaliation. An interesting topic to spell out is how, if retaliation constitutes noncompliance with the DMA, a gatekeeper engaging in it would add to its count of violations and contribute to a finding of systematic noncompliance. Under Article 18, this can result in structural remedies, such as divestiture, being applied to the gatekeeper.

Other solutions to the chicken-and-egg problem might include requirements around timeliness of gatekeeper responses to requests for interoperability specifications and subsequent access. If needed, these requirements could lay out step-by-step procedures on engagement between gatekeepers and business users. Additionally, the Commission could require gatekeepers to set out publicly any security review process required for business users, its costs and timeline. Gatekeepers should also post information of interest to potential entrants, such as how features like 'auto-updating' will be handled.

Speeches by Commission officials and national competition authorities explaining the role of business users and the protections afforded them might assist in reducing information asymmetry with business users in relation to how all these processes will work. In particular, national competition authorities are naturally better connected to their local business communities and could engage in outreach to existing business users and entrepreneurs in their member states. Lastly, industry associations might be able to help potential business users join together to express concerns and develop technical suggestions for the gatekeeper that are broader and more robust than any of them could make alone. Such organisations might be more effective in conveying the concerns of their members to the Commission, while enabling anonymity and creating economies of scale for smaller business users.

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PART II.

Apple's App Store

An important target of regulation of digital businesses are those tools and platforms run by Apple. Apple has designed its products to be closed systems where Apple makes all of the hardware, the operating system, and many accessories, complements, and services. While this is a common business practice in many industries, it is also one that has attracted regulation wherever the industry becomes a gateway to important economic or social activity. Telecommunications is a recent example of a case where regulators required the incumbent business to interoperate with competing complements. Because mobile devices are the gateway to a huge amount of economic and social activity by large majorities of the population around the world, permitting the maker of the mobile device to run a closed system is no longer tenable. The market power of the company that controls a user's mobile device can be used to determine the path of innovation and allow or block the economic activity of other businesses, as well as the choices of users. For these reasons, regulation that mandates interoperability requires more change for companies that have run a closed system in the past than those that have chosen a more open strategy.

Chapter 3.

Equitable Interoperability: The 'Supertool' of Digital Platform Governance

October 13, 2023*

I. Introduction

This Article is concerned with competition in digital platform markets where network effects are strong. As is widely acknowledged, these markets have an inherent tendency towards concentration, leaving consumers with little competition in the market. We explain how interoperability regulation can help stimulate competition in the market in a way that benefits consumers. There are different types of regulations that involve different levels of regulatory control of firms' strategies and products. Interoperability is a form of regulation that is less intrusive than many others and is particularly suited to digital business models and fast-changing digital technology. The report solicited by the European Commission on "Competition Policy for the Digital Era" (the Vestager Report) made this point in 2019,¹ and we build on it here.

* Originally published as Fiona M. Scott Morton, Gregory S. Crawford, Jacques Crémer, David Dinielli, Amelia Fletcher, Paul Heidhues, Monika Schnitzer, and Katja Seim, "Equitable Interoperability: The 'Super Tool' of Digital Platform Governance," *Yale Journal on Regulation* 40 (2023): 1013-1055.

Policy tools in this area include data portability and open standards, as well as interoperability. We will distinguish among these tools below, but we note here that the focus of this Article is on interoperability.²

Regulators can set prices and rates of return, require adoption of certain technologies, mandate nondiscrimination, and more. Unless deregulated by the state, the retail sale of electricity in the United States has the attributes of “classic” regulation. Among other things, a regulator sets or limits the price of electric power paid by consumers and approves or disapproves utilities’ investments in generation, transmission, and distribution facilities.³ But very specific requirements for prices and product design like these require the regulator to make choices that risk creating inefficiencies. In the digital platform context, these concerns are heightened because of the rapid change of products and prices over relatively short periods of time. We caution that heavy-handed regulation risks resource misallocation and the loss, degradation, or delay of products that consumers do or might enjoy. Regulation can, however, avoid these costs while unlocking considerable consumer benefits.

A regulator aiming to reduce market power while increasing consumer surplus therefore wants to use a tool that involves minimal regulation of the product itself, while at the same time promoting as much efficient entry and expansion as possible. Interoperability can achieve both goals. Interoperability in digital platform markets lowers entry barriers by giving new market entrants the ability to join the platform and compete; similarly, it gives existing competitors the ability to access the platform and grow. In a market with direct network

1 Jacques Crémer, Yves-Alexandre de Montjoye & Heike Schweitzer, *Final Report on Competition Policy for the Digital Era*, at 6–9 (2019), <https://ec.europa.eu/competition/publications/reports/kd0419345enn.pdf> [perma.cc/AX4D-BD8P] [hereinafter Vestager Report].

2 Interoperability requires effective interfacing, which need not include general open standards for other parts of the product. Services built on very different proprietary standards can nonetheless interface effectively with good interoperability, as in the case of U.S. wireless phone networks 20 years ago. Effective data portability requires some level of interoperability, but it could also involve conduct that goes above and beyond pure interoperability. This is not an Article about data portability. Nor do the uses of interoperability we suggest here, to our understanding, require open standards; APIs routinely facilitate interoperability between systems that rely on differing, proprietary standards.

3 See Robert J. Michaels, “Electricity and its Regulation,” *Econlib*, <https://www.econlib.org/library/Enc/ElectricityandItsRegulation.html>[perma.cc/Y4Q3-MUDN].

effects, in which users benefit from other users' activity (e.g., owning a telephone), this will take the form of interconnection between users—either directly using the platform's standard, or through the platform. In a market with indirect network effects, in which broader use incentivizes platform and content development (e.g., businesses opening in a popular mall, which further increases the mall's appeal), interoperability allows complementors—the business users who provide services on one side of the platform that complement those of the platform—to enter and compete for consumers using an accessible public interface (API). The entry of complementors not only enhances the platform's value, but can, with time, create competition for the platform's own services and for other complementors.

“Equitable interoperability” means that an entrant can not only join the platform, but join on qualitatively equal terms as others, without being discriminated against by the dominant platform that might have its own competing service.⁴ Equitable interoperability facilitates competition in innovation and differentiation by digital services but entails oversight by a regulator that determines when advances should become part of the regulated interface. It effectively prohibits self-preferencing and discrimination against firms that are not part of the dominant ecosystem.

A simple example is an entering internet service provider (ISP) wishing to join the World Wide Web and its system of interconnection. Such a firm can adopt open standards like TCP/IP and Network Access Points to offer the same functionality as rival ISPs, and, importantly, connect its users to just as large a network size.⁵ Similarly, the creation of the “Open Banking” regulation in the United Kingdom established an interface that licensed financial technology (fintech) companies could use, with customer permission, to connect to the bank accounts of their

4 In the policy solutions below, we envision competition in innovation and differentiation by digital services but describe oversight by a regulator that determines when advances should become part of the regulated interface. Giving this power to a regulator will help prevent a dominant platform from “innovating” in ways that, in truth, simply impose costs on rivals by requiring frequent updates and modifications as they transition to the innovation after innovation. It also ensures that a third party can examine and test the new technology to ensure it doesn't degrade complementors' systems or worsen their user experiences.

5 See Tim Greene, “What is the Internet Backbone and How it Works,” *Network World* (Mar. 12, 2020), <https://www.networkworld.com/article/3532318/what-is-the-internet-backbone-and-how-it-world.html> [perma.cc/ZK3M-8UD2]

customers.⁶ The existence of the banks and their data attracted fintech applications, all of which entered on a level playing field using the same interface. Even the customers of a small bank can have full access, due to that interface, to all participating fintech providers, strengthening competition between banks.⁷ By contrast, Google's Android operating system (OS) offers interoperability to entrants, but it does not do so equitably because Google restricts access to various valuable apps and features in the interoperable version of Android OS.⁸

The equitable interoperability concept is less restrictive for firms than many other forms of regulation because it mandates only the ability to interface and leaves companies with flexibility to design their products. Moreover, when the interface is designed by industry itself, the regulator need not take on this role, but can focus on exercising oversight to ensure the interface promotes competition and is not captured by the dominant platform. For this reason, we describe equitable interoperability as a light-touch regulatory governance scheme. And although interoperability is light touch, it must still be mandated, because a monopolist will typically not voluntarily adopt a policy that erodes its monopoly profit. Indeed, settings where interoperability would reduce entry barriers and promote competition in the market are exactly the instances where incumbents will not want to adopt it.

At the same time, however, equitable interoperability need not lead to a free-for-all in which all platforms must make all functions interoperable with all comers, thereby depriving platforms of control over their own systems or security. Rather, equitable interoperability—like all regulatory tools—should be used with precision and restraint, and it should be mandated only with respect to platform functions for which the regulator is convinced that interoperability will further the goals of contestability and fairness. In a similar vein, not everyone should be allowed to interoperate, especially those firms that cannot guarantee data security and safety. To participate in the ecosystem

6 “Regulatory,” *Open Banking* (2023), <https://www.openbanking.org.uk/regulatory> [<https://perma.cc/7M8M-LCDQ>]. See also “Competition Markets Authority, the Retail Banking Market Investigation Order 20” (2017), <https://assets.publishing.service.gov.uk/media/5893063bed915d06e1000000/retail-banking-market-investigation-order-2017.pdf> [<https://perma.cc/74VAKP8W>].

7 For an example of a product that is interoperable but not equitably so, we discuss the Android OS. See *infra* Section IV.B.

8 We return to this instance in Section IV.B.

created by the UK's Open Banking regulation described above, for example, fintech companies must enroll onto a directory maintained by the Open Banking Implementation Entity (OBIE), which maintains a "whitelist" of developers who have certified, among other items, their satisfaction of security and home-state licensing requirements, thus entitling them to participate and gain access to customer information; customer permission alone is not enough.⁹ We note in the remainder of the Article other specific examples in which the regulator should consider robust licensing or registration requirements for firms that seek to interoperate with regulated platforms.

This Article applies the idea of an equitable interoperability mandate to several well-known competition bottlenecks in digital platforms. In each setting, we provide a way to think about how competition problems might be lessened with a suitable interoperability regime. We offer these ideas as a starting point for a discussion about how to use the interoperability tool; there are many difficult governance, privacy, and technical issues to consider, and further research on these details is needed. One of these issues is whether it is optimal to include an interconnection (termination or access) fee in each situation.¹⁰ We have purposefully studied platform settings where we can make analytical progress without addressing this complex question. It is one where economic analysis can make contributions going forward.

We have engaged in conversations with industry participants and technical experts about the difficulty and cost of carrying out interoperability from a technical perspective. The working hypothesis we use in this Article is that governance issues are more of a challenge than technical issues. The economic analysis proceeds under this assumption.

We also note a diversity of opinion among authors such that not all agree each interoperability policy we discuss will be effective for each platform competition problem presented here. And, of course, equitable interoperability will not fix every competition problem. As with most tools, it will work better in some settings than in others. In some cases, alternative or supplemental tools like divestitures will

9 "Enrolling Onto the OBIE Directory: How To Guide," *Open Banking LTD 3* (Sept. 2021), <https://www.openbanking.org.uk/wp-content/uploads/Enrolling-Onto-Open-Banking-Guide.pdf> [<https://perma.cc/M3FC-AW34>].

10 See Mark Armstrong, "Network Interconnection in Telecommunications" 108 *Econ J.* 545, 555-61 (1998). In models without network externalities, the socially optimal interconnection fee is the marginal cost of providing access; interconnection fees above such levels favor incumbents.

be needed to achieve competition.¹¹ In other cases, interoperability and nondiscrimination may be an alternative to divestitures. And importantly, successful deployment of equitable interoperability requirements in important and complex markets will require a regulator with sectoral expertise and enough staff to ensure the regulations increase competition and are fully enforced.

Economic analysis, however, demonstrates that equitable interoperability is a powerful tool with several uniquely valuable characteristics. Because of its ability to create competition in the market, all authors believe a digital regulator should add interoperability to its regulatory toolkit and use it where appropriate. Although interoperability comes with potential risks, various regulatory designs, including licensing and oversight, could help mitigate such issues. We discuss some options below.

II. How Equitable Interoperability Increases Welfare

Interoperability is a tool that can increase both the contestability and fairness of digital platform markets. The Digital Markets Act (DMA) of the European Commission adopts these goals.¹² In a companion Article, we explain that they are valuable regulatory goals because, from an economic perspective, contestability and fairness typically benefit consumers.¹³ In addition, the concept of fairness embraced in the DMA—fairness of commercial opportunity for business users—is enabled by equitable interoperability. We argue here that equitable interoperability also increases innovation. An overview of these points follows.

11 In our companion Article on competition in the general search market, we recommend certain divestitures. In other cases, interoperability and non-discrimination may be an alternative to structural separation. Mobile operating systems and app stores are settings where the other two policy approaches could be substitutes. See Paul Heidhues, Alessandro Bonatti, L. Elisa Celis, Gregory S. Crawford, David Dinielli, Michael Luca, Tobias Salz, Monika Schnitzer, Fiona M. Scott Morton, Michael Sinkison & Jidong Zhou, “More Competitive Search Through Regulation” 40 *Yale J. on Regul.* 915 (2023).

12 See Council Regulation 2022/1925, 2022 O.J. (L 265) 1, art. 1.1.

13 Jacques Crémer, Gregory S. Crawford, David Dinielli, Amelia Fletcher, Paul Heidhues, Monika Schnitzer & Fiona M. Scott Morton, “Fairness and Contestability in the Digital Markets Act,” 40 *Yale J. on Regul.* 973 (2023).

A. Interoperability and “Fairness” in Digital Platform Markets

A current source of discontent with digital platforms stems from the perception by both consumers and small businesses that the rents from digital technology are unfairly accruing to a handful of large platforms, rather than being distributed more equitably according to each party’s contribution to surplus. The economic reason for this is explained in more detail in the Vestager Report.¹⁴ As the authors detail, when a platform enjoys network effects, an individual user or complementary business makes very little marginal contribution to the creation of surplus.¹⁵ Thus, when an individual user or business bargains for a share of surplus, its leverage is low, and the platform’s is high. The resulting bargain leaves the platform with the vast majority of the surplus.¹⁶ However, all users as a group make a very large contribution to total surplus because it is likely that most of the surplus derives from their ability to interact with each other on the platform, rather than the specific features of any particular, dominant platform. If one considers the marginal impact of users as a group on platform profits, it is very large. If all users together could credibly threaten to move to another platform they could bargain for a fairer share of the surplus.

Interoperability increases fairness in this setting because it allows entrants to share the same network effects the dominant firm enjoys. Proprietary network effects are the essential cause of consumers’ low surplus share. With interoperability, rivals to the dominant firm could compete on dimensions that consumers or business users value, such as privacy and access fees, while also maintaining access to the dominant firm’s user base(s). In essence, interoperability redefines the “property rights” on the network externalities as belonging to users, on both sides of the platform, and not the firm owning the dominant platform.

B. Interoperability and “Contestability” in Digital Platforms

Network effects raise the benefit to a user of a platform or product when many other users are also consumers of that platform or product. The phone system, email, and social networks have strong direct network effects. Indirect network effects work through software, content, or

14 See generally Vestager Report, *supra* note 1.

15 See *id.* at 22-24, 36-37.

16 See *id.*

services on one side that attract users on the other side, who, in turn, attract more content. As an app store gains more developers and apps, it attracts more users, which reinforces the virtuous circle; in a similar way, a car service that has many drivers is more attractive to riders and vice versa.

The economics of the competition problems generated by large digital platforms have been well-covered in other writings.¹⁷ In brief, when network effects are strong, competition occurs for the market rather than in the market: the network effects form an entry barrier that requires a new entrant to unseat the incumbent monopolist and become the new monopolist.

But competition for the market is inefficient. First, competition enforcers must protect nascent competitors so that the dominant firm cannot “buy or bury” them, and this protection is notoriously difficult.¹⁸ Second, the arrival of a rival with a sufficient competitive advantage to overthrow the entrenched incumbent monopolist may not occur at all, or at least not occur with a frequency consistent with maximization of social welfare. Third, users must pay a switching cost to change from one monopolist to the next. A more effective form of competition is therefore competition in the market. When multiple firms are competing directly for the business of consumers and/or business users, all users are likely to experience lower prices, higher quality, and supercharged innovation, regardless of which firm they use.

Interoperability can play a key role in enabling and enhancing competition in the market. It can lower entry barriers so that more firms can enter and existing firms can expand. It can also allow competition in (or contestability of) complementary markets. Interoperability is especially valuable for creating competition when complementary

17 See, e.g., Jason Furman, Diane Coyle, Amelia Fletcher, Derek McAuley & Philip Marsden, “Unlocking Competition: Report of the Digital Competition Expert Panel,” *Digit. Competition Expert Panel* (Mar. 2019), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/785547/unlocking_digital_competition_furman_review_web.pdf [perma.cc/2VL3PZLM]; Mkt. Structure & Antitrust Subcomm., “Report,” in *Stigler Comm. On Digit. Platforms: Final Report*, Stigler Ctr. for the Study of the Econ. & the State 23 (Sept 2019), <https://research.chicagobooth.edu/-/media/research/stigler/pdfs/digital-platforms---committee-report---stigler-center.pdf> [perma.cc/X9YP-C96K]; Vestager Report, *supra* note 1.

18 See generally C. Scott Hemphill & Tim Wu, “Nascent Competitors,” 168 *U. PA. L. Rev.* 1879 (2020) (considering enforcement difficulties that stem from the uncertainty in the context of nascent competitors).

markets are themselves platform markets (e.g., the Facebook and YouTube apps are complements to app stores), or where there is a risk of leverage of market power from a core platform with market power due to network effects to a complementary line of business.¹⁹ Effective competition in complementary markets is also important because complementary markets can provide the basis for competition in the core platform market, whether by direct entry, by fostering entry from a third party, or through disintermediation.

C. Interoperability and Innovation

Dominant platforms that do not face competition, or a risk of diversion of users in response to innovation by others, have little incentive to innovate in ways that benefit consumers of their core service. Rather, such platforms have incentives to invest in better ways to exploit consumers (increasing surplus extraction from consumers) or in better ways to leverage their market power into adjacent markets by excluding existing competitors (increasing surplus extraction from competitors) in adjacent markets.²⁰

19 For example, Apple Pay relies on a wireless payment technology—an near-field communications (NFC) chip—with which Apple as a general matter does not allow third parties to interoperate. Such a policy might allow Apple to leverage from the core Apple OS into payments.

20 The economic literature concluding that possession of monopoly power decreases the incentive to innovate is, in our view, powerfully convincing. Nonetheless, there remains some significant resistance to the notion, typically on the basis that the big platforms appear to be innovating at a vigorous pace. Facebook develops new ways to connect, Google adds places and information to its map app, Apple constantly releases new versions of the iPhone, and Amazon introduces popular programs like free Prime shipping. In our view, those who advocate such positions fail to consider that, but for the fact that the platforms possess monopoly power in one or more markets, the platforms might innovate even more. Companies quite obviously do not simply stop innovating as soon as they acquire monopoly power. Indeed, companies may conclude that it advances their economic interests to continue innovating, albeit at a reduced pace. Innovation in product design and new features, for example, can keep customers engaged with products and ensure they remain loyal to the brand and continue to buy the companies' products, even at monopoly prices. The Antitrust Division maintains on its website an internal article exploring questions about the interplay of monopoly and innovation that gathers much of the then-current literature on the topic. From that literature, it makes the empirical case, based on data about a collection of monopolists of U.S. markets, that each of them innovated at substantially depressed levels when they held monopoly power, as compared to when they did not. F. M. Scherer, "Technological Innovation and Monopolization," *U.S. Dep't Justice* 6-8, 21-22, 30-33, 44 (2006), <https://www.justice.gov/sites/default/files/atr/legacy/2006/10/30/218697.pdf><https://perma>.

Another purpose of interoperability is to increase innovation. This can be achieved partly by the entry of more competitors into the marketplace. In addition, the security of the interface lets competitors already in the market innovate with the knowledge that they can continue to reliably connect to the interface and attract consumers.

Interoperability allows innovation on both sides of the interface. Past examples demonstrate how an open interface leads to a cascade of innovation on the complementary business side of platforms. After the Federal Communication Commission's (FCC) registration program for telecommunications equipment was in place and connections between the network (telephone wires) and devices (phones and equipment) were opened, households could buy not only brightly colored and lightweight phones, but cordless phones, answering machines, and many other devices. Similarly, when IBM began selling computer systems in the 1960s that could connect with peripheral devices through a standard interface, that move encouraged other electronics companies to develop their "plug-compatible" devices that often were higher-quality and lower-priced than their IBM equivalents.²¹ The basic protocols enabling the connection of networks, TCP/IP, led to an explosion of content that we now know as the World Wide Web.²² The creation of Open Banking in the United Kingdom standardized the APIs for sharing transaction data from consumer bank accounts. That banking interface spawned an entirely new financial technology sector that was unanticipated by regulators and is popular with consumers.²³ Across decades and industries, interoperability has allowed for tremendous innovation and consumer benefit.

cc/2PWR-7533].

21 See Lawrence A. Sullivan, "Monopolization: Corporate Strategy, the IBM Cases, and the Transformation of the Law," 60 *Tex. L. Rev.* 587, 600-03 (1982).

22 See generally Vinton G. Cerf, David D. Clark, Robert E. Kahn, Leonark Klienrock, Barry M. Leiner, Daniel C. Lynch, Jon Postel, Larry G. Roberts & Stephen Wolff, "A Brief History of the Internet," 39 *ACM SIGCOMM Computer Comm. Rev.* 22 (2009).

23 See Hmiah Thomas & Anita Kimber, "How Regulation is Unlocking the Potential of Open Banking in the UK," *Ernst & Young* (Mar. 28, 2019), https://web.archive.org/web/20220122053928/https://www.ey.com/en_gl/banking-capital-markets/how-regulation-is-unlocking-the-potential-of-open-banking-in-the-uk [<https://perma.cc/73HG-B4TQ>].

III. Regulatory Solutions

Using regulation to combat a problem like network effects has particular advantages. A regulator can reduce entry barriers by requiring interoperability as well as by mandating policies that promote multihoming, establishing default property rights, restricting allowable business models, and mandating behavior such as non-discrimination. Regulatory solutions for these problems are now enshrined in the Digital Markets Act,²⁴ and are also proposed in bills put forward by the U.S. House Antitrust Subcommittee.²⁵

Multihoming and interoperability both ameliorate or even eliminate the detriment to fairness and contestability that otherwise flows from network effects. Multihoming occurs when users make use of more than one platform for the same or a similar service, and therefore switch between them in response to price or quality differences. The way that multihoming stimulates competition between platforms is evident in ride-sharing markets where riders and drivers may have multiple accounts (e.g., with both Uber and Lyft). Multihoming requires users to engage actively with more than one platform, such as by entering a destination in Lyft and entering a destination in Uber. But when many users participate in many platforms in this way, it is possible to generate positive network effects while also preserving competition in the market. This type of competitive pressure is brought to bear on ride-sharing services in geographic markets where both drivers and riders multihome and a rider can easily choose the service with the lower wait time or price.²⁶

Because multihoming increases competition, dominant firms may wish to limit it using devices like loyalty discounts or technical barriers, whereas regulators may wish to encourage it. However, the intrinsic nature of the product, the technology, or consumer behavior can make

24 Council Regulation 2022/1925, 2022 O.J. (L 265) 1, Arts. 5.3-5.10, 6.3-6.13 (imposing interoperability requirements on gatekeepers across various circumstances).

25 "House Antitrust Subcommittee Unveils Five Big Antitrust Bills," *Reuters* (June 14, 2021, 4:09 PM EDT), <https://www.reuters.com/legal/legalindustry/house-antitrust-subcommittee-unveils-five-big-tech-antitrust-bills-2021-06-14> [<https://perma.cc/U6JV-YGWQ>] (describing the five proposed bills).

26 Sangeet Paul Choudary, "What the Uber-Lyft War Teaches Us about Success and Failure in the On-Demand Economy," *Product Nation* (Oct. 5, 2015), <https://pn.ispirit.in/what-the-uber-lyft-war-teaches-us-about-success-and-failure-in-the-on-demand-economy> [perma.cc/9HE7-ZU43].

multihoming costly or impractical, such that it does not work to create competition between platforms with network effects. Most people do not want to purchase, carry, and operate two mobile phones, for example. Likewise, it may take too much time and effort to load holiday photos and news onto multiple social networks. Multihoming can be especially difficult in certain business settings in which the user has integrated its systems with those of the provider, as is the case with certain functions in the digital advertising market. Publishers, for example, tend to use only one “publisher ad server,” the systems of which are integrated into those of the publisher to allow near-instantaneous offers of ad space.²⁷ Switching from one ad server to another is complex and can lead to lost sales and data, which discourages multihoming.²⁸ Thus, multihoming alone will not be able to generate competition in the market in some settings.

A second tool available to a regulator is equitable interoperability. We argue here that interoperability is both “light touch” and effective. It is “light touch” because it only defines an interoperable interface while allowing firms free choice about other aspects of their products and strategies. But such an interface significantly lowers entry barriers for rivals, allowing them to enter and compete in the market, and it therefore increases contestability. Interoperability, as applied to dominant platforms with network effects, substantially reduces barriers to entry by new competitors, converts proprietary network effects to market-wide network effects, and reduces gatekeeper power. These reduced barriers allow more competitors to enter an industry, increasing choice, competition, and innovation that benefits consumers. Interoperability can also be valuable for facilitating multihoming, with the benefits outlined above. Interoperability can shift competition from being for the market to being in the market. It is a regulatory governance tool that stimulates innovation and works in a broad variety of settings.

For maximum effectiveness, interoperability must be paired with a prohibition against discrimination. We call this requirement “equitable interoperability,” to reflect that the terms of such interconnection

27 Fiona M. Scott Morton & David C. Dinielli, “Roadmap for a Digital Advertising Monopolization Case Against Google,” *Omidyar Network 16* (May 2020), <https://omidyar.com/wp-content/uploads/2020%9/Roadmap-for-a-Case-Against-Google.pdf> [perma.cc/2AW2-GU6H].

28 *Id.*

must give all businesses using the platform access to the market and to consumers that is qualitatively equivalent (in terms of scope, ease, cost, utility, and the like). In the case of direct network effects this requires no discrimination between the connecting entities served by the platform's interface. In the case of indirect network effects, the prohibited discrimination is both among complementary businesses using the platform and between those businesses and any vertically integrated service provided by the platform. Nondiscrimination ensures that nascent rivals or other competitive threats are not disadvantaged as they attempt to connect or compete in the market, or as a nascent threat to the platform itself. As is true with all competitive markets, final outcomes such as revenue or popularity with consumers will reflect competition and need not be the same.

A critical step in the regulatory process is identifying the bottleneck where an equitable interoperability mandate is necessary and effective. The regulator must first designate the core platform services that require interoperability using criteria such as size, the presence of network effects, the absence of multihoming, and entrenched market power. After a dominant digital platform has been identified, the next step is to determine the most effective location for the interface as well as its design and functionality. These tasks can be carried out in different ways. The staff of the regulator could do both. Another option, proposed in legislation in the United States, allows the regulator to establish and oversee a technical committee including industry participants that would carry out the work.²⁹ If this approach is chosen, the project does not burden the regulator with a responsibility to engage in interface design: it can evolve flexibly with technological trends to meet the needs of the industry, all while protecting consumers from market power.

IV. Categories of Interoperability

It is helpful to think about a platform's business model, the type of network effects present in its market, and the market structure when categorizing types of interoperability.

²⁹ See "Augmenting Compatibility and Competition by Enabling Service Switching Act of 2021," H.R. 3849, 117th Cong. §§ 6(c)-(d) (2021) (establishing a technical committee to design standards and provide regular recommendations).

A. Direct Network Effects

“Between-platform” interoperability eliminates proprietary direct network effects and opens the network to entry. The dominant platform’s users can connect to users of other platforms as well as users on their home platform. Whether the functionality of the connection to outside users is the same as, or a subset of, the functionality on the home platform will depend on the regulatory rules.

For example, email providers like Gmail and Outlook connect to one another so that users of all email providers may send messages to each other irrespective of their provider. Similarly, wireless phone networks like Verizon and T-Mobile connect calls to one another. Notice in this latter example the only requirement is that calls started on one network can be terminated on another; it does not mean that a Verizon phone will work on the T-Mobile cellular network. The implication of this incompatibility is that the handset cannot multihome across networks. Similarly, in the social network context, a post may originate on one social network and terminate on another, but the user’s account is located on just one network.³⁰

B. Indirect Network Effects

Interoperability erodes the platform’s proprietary indirect network effects. Instead, the network effects accrue to both business users and end consumers who can freely choose among multiple functional complements. Eliminating these network effects opens markets in three ways.

First, the functionality of the service offered to third-party complementors is not degraded. Equitable interoperability requires the platform not to self-preference vertically integrated apps or content. For example, in the Google search cases brought by both the European Commission (EC) and the U.S. Department of Justice, enforcers explain how Google provided specialized search poor interoperability with its general search engine relative to the interoperability accorded Google’s own vertically integrated services.³¹ Complementors such as specialized

30 A wireless customer can also port their phone number to a rival carrier. Portability in an interoperable social network (“social graph portability”) would mean taking one’s profile from the dominant network to a rival network, while continuing to being able to communicate with friends on the dominant network.

31 Mark Scott, “Google Fined Record \$2.7 Billion in E.U. Antitrust Ruling,” *N.Y. Times* (June 27, 2017), <https://www.nytimes.com/2017/06/27/technology/eu-google-fine>.

search engines can challenge the core platform directly if they are stronger or may help foster a challenger platform.

Second, multihoming by businesses, for all or part of the service, is available without restriction or disadvantage. Interoperability that permits multihoming is interoperability at the market level. This is importantly different and more powerful than the interoperability described in Section IV.B.1. It implies that the dominant platform's interface is used across the market by all platforms. One set of APIs across suppliers and across platforms can allow third-party content or services to be available on all competing platforms. For example, an API that lowers the cost to sellers of displaying its wares on many marketplaces increases entry and intensifies competition. In addition, interoperability needs to be equitable in this context so that rival sellers interact with the marketplace in the same way as the marketplace's own seller does. Entering platforms can more easily attract supply-side businesses in this environment.

Third, it ensures rival platforms access to proprietary complements. If the APIs between the platform and complements are public so that all (licensed) parties can use them, then the proprietary complementary services of the dominant platform will function the same way on other platforms. The regulator might not want to allow such popular complements to be withheld from rival platforms.³² (An example would be if Google did not permit Google search to be installed on a new variant of the Apple operating system.) Full access to all complements makes an entering platform more attractive.

C. Contractual (Lack of) Interoperability

As we will discuss below, there are cases in digital markets where services are (or could be) technically interoperable, but a dominant platform or a rival service creates a contractual barrier to entry or use of the service. An example of such a barrier is a pre-installed default position on a platform that drives share to the default service. In the cases we discuss here, this type of contract can be a violation of equitable interoperability.

html [<https://perma.cc/28DW-VR9U>]; Rani Molla and Adam Clark Estes, "Google's Three Antitrust Cases, Briefly Explained," *Vox* (Dec. 17, 2020), <https://www.vox.com/recode/2020/12/16/22179085/google-antitrust-monopoly-state-lawsuit-ad-tech-search-facebook> [<https://perma.cc/M2PM-ZUYP>].

32 This issue is a common concern in the evaluation of vertical mergers in media markets.

D. Data Interoperability

As does the Vestager Report, we draw the distinction between protocol interoperability, which allows a service to function at a basic level (e.g., being able to post a YouTube video on a Facebook timeline) or a sophisticated level (interconnected social networks), and data interoperability, which also allows the sharing of data. For example, it is the continuous sharing of personal banking data in a standard format through Open Banking that drives innovative use cases by fintech entrants. But interoperability can occur with and without data transfer. For example, mobile telephone termination does not require the terminating phone company to know any personal information about the caller, nor would termination of a post on social media. But in some digital markets, sharing relevant data between services could be a key element of effective interoperability.

It is outside the scope of the Article to discuss data interoperability in detail. But, as previewed below, sharing relevant data between services may allow those complementary services to offer useful functionality and may prevent the extraction of consumer and/or business user value that arises when valuable data is controlled by one or a small number of dominant platforms. Therefore, a governance scheme for data interoperability may well promote innovation and competition. Importantly, data interoperability will need to involve the permission of the user. This consent must be obtained in a way that is meaningful given the behavioral limitations of consumers. With such consent, the user gives a “permissioned token” to the third-party app. This token will give the app (e.g., a meeting scheduler) access to the user’s calendar, or an expense app access to the user’s credit card data. The concept is that competing apps could have a way to obtain appropriately limited access to the data they need to perform the services the consumer has requested.

These and many other interesting issues and problems surrounding platforms’ accumulation of large data datasets and interoperability thereof could be core considerations in the design of appropriate regulatory intervention in any given market.

E. Data Portability

Data portability is related to interoperability but is not the same concept. It refers to a consumers’ ability to take (or authorize the destination

service to take) their data and identifying information (e.g., a phone number) from one platform to another. Portability implicitly requires that the standard in which the data are provided is useful. In particular, the data should be able to be uploaded and used by the customer's new platform. Portability facilitates switching platforms (which requires porting your data to a new provider) and therefore intensifies competition in the market. For example, a customer leaving Amazon.com could bring their past purchase data with them to Walmart.com to improve the service and recommendations they receive from Walmart. The increase in competition due to portability will occur even if interoperability is already present. For example, being easily able to move archived email encourages a user to switch ISPs or email providers. If the porting requirement is strong enough, it may facilitate multihoming, which we know intensifies competition. Portability should also facilitate innovation because the recipient of useful data can create new products and services; this would create new competition and even new markets. Interoperability also causes these last two effects in a stronger form.

V. Interoperability as a "Supertool"

Below we discuss four platforms likely to qualify as "covered platforms" under proposed legislation in the United States³³ and as designated "Core Platform Services" (CPS's) under the EU's DMA.³⁴ In practice, a single corporation may operate more than one covered platform, of which we only analyze a subset below. Google, for example, may well have at least five covered platforms or CPS's subject to oversight: Android OS, Google Play, Google Search, YouTube, and its advertising technology (ad tech) services.³⁵ Facebook (now Meta) will likely qualify for its personal social network, number-independent communications services, and ad tech services. Apple may be designated for at least its iOS operating system and the Apple App Store. Amazon's e-commerce marketplace may qualify.³⁶ We introduce some ideas of how the

33 Augmenting Compatibility and Competition by Enabling Service Switching Act of 2021, H.R. 3849, 117th Cong. § 5(6) (2021)

34 Council Regulation 2022/1925, 2022 O.J. (L 265) 1, Arts. 1.2, 3.2(b).

35 Google arguably has a dominant share of proprietary data on consumer demographics, locations, and interests, but dealing with the competitive consequences of these data require special considerations that are beyond the scope of this Article.

36 Microsoft is the fifth corporation that seems likely to be covered by proposed

market power exhibited by these CPS's can be reduced through the implementation of appropriate interoperability rules. We stress again that we are not sure that all the ideas will work as well as we hope; there remain difficult issues to resolve relating to monetization and governance in particular. Nevertheless, we feel it is important to begin a conversation about these regulatory options.

A. Facebook.com's Social Network

It is uncommon for a private U.S. corporation to control a ubiquitous and important communications network from end to end in the way that Facebook controls how its billions of users communicate with one another. For example, the U.S. postal service is a government service available to all users. Similarly, the telephone began as an entirely proprietary network before AT&T was required by the government in 1913 to allow other telephone companies to connect to its network including its long-distance lines.³⁷ Yet, users were not free to connect equipment to AT&T's network. After several landmark decisions by courts³⁸ and the FCC,³⁹ competitors could connect their equipment to the network, but only via a costly interconnection device. In 1975, the FCC started a registration program whereby the FCC examined equipment companies and, if equipment was found to pose no risk of harm to the telephone system, permitted the sale of that equipment for connection to the system.⁴⁰ These two forms of mandatory interoperability—network and hardware interoperability—together meant that AT&T no longer controlled all the features and functions of telephone communications from end to end.

Email then became a ubiquitous form of communication, and it too employed interoperability. Email interoperability relies on several standard protocols that are neutral and universal, which makes it

regulation, but for reasons of space, we do not discuss it in detail. Many of the points about search, cloud, and software discussed in the context of other firms are likely to also apply to Microsoft.

37 See Dave Butler, "History of AT&T: Timeline and Facts," *Street*, (Feb 18, 2020, 7:06 PM EST), <https://www.thestreet.com/technology/history-of-att> [perma.cc/7XSF-Q87M].

38 See, e.g., *Hush-A-Phone Corp v. United States*, 238 F.2d 266 (1956).

39 See, e.g., *Use of the Carterfone Device in Message Toll Telephone Service*, 13 F.C.C.2d 420 (1968)

40 See *Jonathan E. Nuechterlein & Philip J. Weiser, Digital Crossroads: Telecommunications Law and Policy in the Internet Age* 43 (2013).

impossible for a single company or entity to control the system.⁴¹ Decentralization and interoperability have produced a stable and durable system in which a message on any participating ISP can be delivered to a user on any other participating ISP.⁴²

SMS (short message service) is another example of a widely used, but decentralized, communication system. Its developers pioneered SMS as a standardized protocol for exchanging brief text messages between mobile phones. This protocol became widely supported by various for-profit mobile phone manufacturers and carriers globally by 1995 and has provided the foundation for interoperability of text messaging for years.⁴³

The notion of equitable interoperability we introduce below—and as applied to Facebook.com's personal social network—is focused on returning the benefits of direct network effects to end users.⁴⁴ Today, the direct network effects in Facebook's personal social networking are proprietary and controlled by the operator of the platform. The purpose of interoperability is to make these network effects operate at the market level so that entry of competitors is encouraged.

Mandatory interoperability as applied to Facebook.com would require that users of Facebook could post as usual and have content flow to their friends, some of whom might have accounts on rival social networks. Those friends in turn could post and have the content flow to friends on Facebook. The technical requirements to make this interoperability effective would include establishing the APIs and standards for passing certain formats, for example, image, text, video, and calendar. In

41 See Karissa McKelvey, "Breaking Tech Open: Why Social Platforms Should Work More like Email," *The Reboot* (Feb. 1, 2021), <https://archive.ph/NUfOZ> [<https://perma.cc/F8KG-8FXM>].

42 Kate Kaye, "WTF is Interoperability?" *Digiday* (July 6, 2021), <https://digiday.com/marketing/wtf-is-interoperability> [perma.cc/4GEY-4B2L] ("If the way email worked was not interoperable, we wouldn't be able to send an email using Gmail to someone's Yahoo email account. But because email systems are interoperable, we can.").

43 See Friedhelm Hillebrand, "Global Market Development," in *Short Message Service (SMS): The Creation of Personal Global Text Messaging* 125, 125-30 (Friedhelm Hillebrand ed., 2010).

44 We build on the work of Michael Kades and Fiona Scott Morton. See Michael Kades & Fiona Scott Morton, "Interoperability as a Competition Remedy for Digital Networks" (Sept 2020) (unpublished manuscript), <https://equitablegrowth.org/wp-content/uploads/2020/09/092320-WP-Interoperability-as-a-competition-remedy-for-digital-networks-Kades-and-Scott-Morton.pdf>

addition, there would need to be a standardized process for establishing friendship links, perhaps with an address protocol like the internet TCP/IP. A user on Facebook.com might receive a friend request from a user of network G. They could approve the friend request, being fully aware that the friend is located on network G. Once friends on the different platforms confirmed their desire to be linked, content posted by them would flow back and forth, in the standardized format, just as it does within a proprietary network.⁴⁵

The interoperability we propose here is importantly different from aggregation. An aggregator is software that collects the entirety of a user's activity in some sector. For example, if a user is looking to buy used Star Wars Legos, an aggregator might scour multiple auction sites to find listings and present them together for the user to compare. A real-world example of aggregators would be the meta-search travel sites. Kayak, Hipmunk, Skyscanner, and others search for flights on the airline sites themselves and on online travel agents like Expedia, Orbitz, and Travelocity (which were previously separate corporations). Users of such aggregators see flight results from all these distributors with one search. Interoperability, by contrast, would mean that the user opens only the service they belong to and sees—in that original interface—content sent by their friends that originated on other networks.

An aggregator of social network content would need to gather information from many social networks where its users have accounts. It would effectively be searching a platform and collecting information. Without carefully designed data safeguards, this might have negative competition or privacy implications. Unrestrained interconnection might allow one network to extract all sorts of information from

45 The regulator presumably should allow a network that receives content from a different network to display that content with the same look and feel—font and formatting and the like—as used for content emanating from within the network. But the regulator should consider requiring that content from outside the network be labeled as such, and the label should include the origin of the content. When a Facebook user reads a post written by their friend on network G, the Facebook user should be made aware of that fact. Such a requirement is equitable in that, without it, the Facebook user might erroneously presume their friend is on Facebook. This would cause them to overvalue Facebook—whose network effects would be amplified by the misperception—and deter them from switching because of a misperception. The requirement would also facilitate “in the market” competition. By ensuring that the Facebook user knows their friends are using other networks, the label would put those other options (through the delivery of accurate information) front of mind, which would encourage switching.

another, or even process data residing in another system. It is important to understand that the concept of equitable interoperability for social networks proposed here is far narrower. In our conception, interoperability is more like the old pneumatic tube that carried messages around an office building in the early twentieth century: messages pop out of the tube and the social network delivers them. The social network in turn places messages from its users into the tube when those users have friends on other sites. Interoperability decidedly would not allow network G to reach into Facebook.com and snoop around its social graph. Nor would it allow Facebook to gather information about network G's users, including those who sent content to Facebook. Likewise, users of network G would be unable to gain insight into algorithms and other proprietary processes or properties. The only thing interoperability would permit is the transmission and receipt of content sent or posted by users.

If Facebook.com were required to interoperate under either EU or U.S. law, the process would necessitate the design of APIs through which networks could exchange content. Just as a protocol is needed to exchange email, that same function must be designed for social networks. Designing a software interface is often straightforward because code is easily changed and modular, and a relevant interface may already exist within the dominant firm. The interface would define whatever is determined to be "standard functionality" (today, that might include text, images, video, and calendar) that is of most value to consumers and defines APIs that permit those elements to be exchanged by any participating network.⁴⁶ For instance, a parent on Network G wanting to know whether a school with an account on Facebook.com is closed will benefit from receiving a simple notification via text that contains that information, even if the font or illustrations are special to Facebook, non-standard, and only visible to members of Facebook.⁴⁷

Posts would arrive in a user's feed in an unchanged way (except that they would be labeled with the network of origin) so as not to disrupt the receiving platform's business model. That is, if the receiving platform sorts and arranges messages according to the type of content, forecasted

46 This type of interoperability corresponds to "full protocol interoperability" in the Vestager Report terminology. Vestager report, *supra* note, 1, at 85.

47 Under this proposal, the technical committee would regularly update what constitutes standard functionality.

ad revenue, or time of day, the platform would continue to employ that algorithm without discrimination against posts that originate elsewhere. In the case of friends on other platforms, for example, Facebook.com would deliver users' posts to their friends' home networks, and the home network would deliver the post to the destination friend.⁴⁸

An entering platform could offer differentiation through the business model (e.g., via a subscription rather than via ad support) or content moderation (e.g., less hate speech) or privacy considerations (e.g., more or less data exploitation). Not all services would be part of the "standard functionality" and included in the API. Users would have to belong to a social network to enjoy its non-standard, differentiated features. This type of innovation would more easily attract users to a new network when network effects are not a barrier. Users, as they do with their email, could move to the entrant while continuing to send (or receive) messages and posts to (or from) their friends on Facebook.com or any other participating platform.

Differentiation would also arise. A platform run by the National Rifle Association, for example, would likely have different content moderation policies than one run by the Sierra Club, which would again differ from one run by the Walt Disney Company. Users could vote with their feet by choosing a home network that offered the speech environment and business model that best aligned with their needs.

One reason we assume that cross-posting interoperability is technically feasible is that we see it in the marketplace frequently. For example, Instagram (a Meta property) currently makes it relatively easy for users to post their Instagram content on various other apps, including apps outside the Meta family such as Twitter and Weibo.⁴⁹ Facebook recently has taken steps to create greater interoperability among its own family of products by integrating the messaging and video functions of Instagram, WhatsApp, and Messenger.⁵⁰ We also know that social networks can deny cross-posting interoperability when doing so serves

48 Kades & Scott Morton, *supra* note 44, at 18.

49 See "Share from Instagram to Other Social Networks," *Instagram*, https://help.instagram.com/365696916849749/?helpref=related_articles [<https://perma.cc/8KE4-GUYJ>] (describing how to share from Instagram to other social networks)

50 Kaya Yurieff, "Facebook Takes a Big Step in Linking Instagram, Messenger and WhatsApp," *CNN Business* (Sept. 30, 2020, 8:01 AM EDT), <https://www.cnn.com/2020/09/30/tech/instagram-messenger-messaging/index/html> [perma.cc/EP8J-VDQ8].

their competitive interests. The story of Vine, a now-defunct video-sharing app, provides an example. "Vine users initially could connect with their Facebook friends through Facebook's 'Find Contacts' API" and then upload videos to be seen by their Facebook friends.⁵¹ But when Vine was acquired by Twitter (a perceived threat to Facebook), Facebook modified its APIs to disable this functionality, substantially devaluing Vine and frustrating the purpose of Twitter's acquisition.⁵² Ultimately, Twitter shut down Vine.⁵³

If Facebook were mandated to interoperate, other social networks would be free to choose whether to participate or not. A social network offering a friends and family service similar to that offered by Facebook might want to interoperate so that it could more easily attract users. Another type of social media (e.g., TikTok) might not gain from interoperating with Facebook, and any choice to interoperate on its part would be voluntary. Indeed, the fact that a platform like Twitter has grown and prospered without being able to interoperate with Facebook suggests that it might be better off without interoperating if given the choice. But an entering social network for children that was run by Disney, for example, or a small town that wants to run its own social network, might well want to interoperate.

These nascent entrants and any existing competitors should have input into the design of the interface to make sure it covers critical functionality and promotes entry. For this reason, any successful regulation will likely include a role for industry input through some kind of technical committee or process. The regulator could task a committee including entrants and neutral experts to design the APIs in conjunction with the covered platform. This setup, however, still requires the regulator to approve the APIs so that the interface is not captured by the dominant firm. The regulator would approve APIs or changes to them based on their impact on competition and whether they promote contestability and fairness.

It is important to stress that self-regulation will not work in this setting. It may be tempting to allow the dominant firm to design the APIs and simply publish them for everyone else to use. But if the dominant

51 Fiona M. Scott Morton & David C. Dinielli, "Roadmap for an Antitrust Case Against Facebook," 27 *Stan. J.L. Bus. & Fin.* 267, 303 (2022)

52 *Id.*

53 *Id.*

firm is placed in charge, it has the incentive and ability to alter the interface every time a threatening competitor appears likely to obtain any significant market share.⁵⁴ In that case, content flowing to or from competitors will not transmit properly, making consumers—who value reliable communication—reluctant to leave the dominant firm.⁵⁵ To guard against this outcome, the regulator must have ultimate control. If the regulator empowers a technical committee, that allows the regulator to avoid controlling the pace of technological change or making design choices. The regulator instead can protect the interface from capture by the dominant firm, from bias against any set of entrants, and from changes that block or restrict entry.

The “equitable” part of equitable interoperability is a necessary component of the regulation. When a platform engages in content moderation, chooses the prominence of content, and limits access to its users, it would have to do so regardless of the home platform or origin of the content. For example, no compliant platform could discriminate against content simply because it originated on a rival platform. It may also be necessary to prohibit the monetization of users from other platforms, which might take the form of analyzing incoming messages from users’ friends and gathering information to later monetize them,

54 The dominant firm also could give its internal team advance notice of changes or make the interface difficult to use by other, and so forth. These concerns are similar but not identical to concerns relating to “standards wars,” in which two or more incompatible technologies enable roughly similar product functions, and the companies that control those technologies vie to make their own technology the last one standing at the end of the war. See generally Carl Shapiro & Hal R. Varian, *Information Rules: A Strategic Guide to the Network Economy* 261-84 (1999) (Describing the dynamics of “standards wars”), Standards wars are expensive and inefficient. See *id.* at 276-84. They also can delay adoption of new technologies. See *id.* at 264 (“[R]ival, incompatible approaches to a new technology can indeed kill or at least greatly retard the growth of that technology.”). In standards wars, companies exert their own power, hoping the technology they control will become the universal standard in the relevant market. The prospect of dominant platforms’ having control over APIs is not that the dominant platform will call upon its vast financial, cultural, and advertising power in launching a campaign a small competitor cannot win. The concern is that the dominant platform will engage in a relatively inexpensive exclusionary strategy. In our world of mandated interoperability, the dominant firm might design the APIs or modify them to slow data transfers to or from particular rivals, or to transmit posts originating on rival platforms using layouts that are unappealing, colors that are unappealing, or even fonts that undermine the look and feel or other branding choices the rival platforms have made.

55 The technical committee must establish a process whereby it announces and publishes new interfaces early enough and at the same time to all market participants so that those participants can adopt on time.

sell ads, or combine them with other data about those friends.⁵⁶ Such activity might be prohibited in order to give the home platform the revenue from its own users and to protect those users' privacy. If so, social networks would see the content received by their own users just as they do now, and they would be able to monetize those users according to their terms of service, subject to privacy-based or other regulated data usage restrictions.

The FTC could impose mandatory interoperability on Facebook.com as a remedy in the current antitrust case against it in addition to divestiture of WhatsApp and Instagram.⁵⁷ Alternatively, the United States could enact legislation mandating interoperability for the large platforms (which would include Facebook.com); this is the approach taken in the DMA with respect to messaging apps.⁵⁸ Notice, though, that creating effective interoperability between social networks may require social networks that avail themselves of the opportunity to interface with Facebook.com to themselves be interoperable with one another. Without this feature there could be many small entrants allowing content exchange with Facebook.com but not among themselves, thereby limiting their own growth and lowering the quality of the combined network.

The importance of privacy to users of social networks is a reason that platforms electing to interoperate should be required to obtain a license that expressly prescribes requirements for the transmission, use, and display of content shared through the regulated APIs, and that further proscribes other uses of the content. The regulator and technical committee need not demand perfect privacy; rather, standards should be designed to ensure privacy is not degraded relative to the status quo. Applicants for such a license should demonstrate the ability to meet minimum safety, security, national security, and data protection standards. The license to use the interface also could come with an obligation to follow non-discriminatory reciprocity with all other license holders. The cost to Facebook or any other social network of

56 Consideration of different platforms' monetization strategies and their implications for the design of equitable interoperability regulations for specific applications (including Facebook's social network) are challenging and would require careful further economic analysis.

57 For details on the design of a remedy, see Kades & Scott Morton, *supra* note 44, at 38-42 (offering and discussing a draft remedy).

58 See generally Council Regulation 2022/1925, 2022 O.J. (L 265) 1, art. 6.

delivering the posts of its users—a small amount of electricity—is very similar regardless of whether their friends are on or off the platform, so interconnection fees are unlikely to be needed unless a business model develops that has significant asymmetries.⁵⁹

There are several difficult issues that arise when analyzing the variety of functions in a social network and how they could be made interoperable. We do not have complete solutions, nor do we address all the issues, but we raise a few of them here to encourage discussion. For example, the creation of groups is an important aspect of social networks that should be part of the interoperability regime. A group administrator forms a group and invites members. Under interoperability, those members may have different home networks. A member whose home network is not the same as the group's administrator should be able to participate in sharing content as described above. That person's posts would flow to the administrator's network and be distributed as usual. Content moderation, again, should follow the rules of the administrator's network in a nondiscriminatory fashion.

Different networks may monetize differently, which may cause their preferred content moderation to vary. For example, if a user creates a post with external content, does clicking on that external content lead the reader to leave the social network? A network that relies on advertising for revenue will not want the reader to leave and may downgrade that post accordingly. A network that charges a subscription may not be harmed if the user leaves to read content elsewhere and does not downgrade the post. The technical committee or regulator may wish to create conduct rules concerning the format of external content that can be included—and how it is treated by the receiving network—to ensure equitable interoperability. It may be that the ability to leave the social network to consume content on the original (creator) site would make the internet more open and deliver more revenue to those sites.

Although interoperability can eliminate proprietary direct network effects, there remain indirect network effects even in a social network. For example, the more other users on the platform who are similar, the better the quality of their feeds will be, assuming the network learns from the behavior of other users and applies those results. If these forces

59 This is very different from the interconnection of the wired telephone system that required structures and equipment as well as maintenance, all of which came with costs that had to be borne by one party or the other.

are large, a small network may not be able to match the quality of a large one. However, a small network may be able to use its differentiation to overcome any disadvantage. A Disney network, for example, could use Disney content; the network of a small town would have more local content to offer its users. Nonetheless, one could think about a second stage of regulation where a dominant platform is required to license useful metadata of this type to entrants.

Lastly, the regulator and technical committee will have to determine the specific privacy regulations required by the interface it establishes. It is critical that the regulator not reject interoperability because privacy cannot be made perfect, but rather design interoperability so that privacy is not degraded relative to the setting without interoperability.

B. Google Android and Apps

Equitable interoperability doesn't only require that products work with each other, but also that they do so in a way that is qualitatively the same as, or broadly equivalent to, the way they work with other products in terms of ease, cost, utility, speed, and the like. This condition is not met if interfaces are designed to preference certain products and services over others, for example when a platform makes it easier, or the default, to interoperate with its own products rather than the products produced by others. If a dominant firm designed an interface to its operating system so that its own search function was faster than that of its rivals, for example, this would likely be discriminatory.⁶⁰

The Android OS, controlled by Google and used in most mobile phones other than those made by Apple, provides an example of a system or feature that can be interoperable but not equitably so. Android is open source, meaning that its code is public and can be freely used and modified.⁶¹ To install certain Google apps such as Google Maps, Google Search, and the Chrome browser, however, manufacturers must license what sometimes has been termed the "official Android."⁶² In recent

60 Similar allegations have been levied against Google in relation to its Chrome browser. Daniel Aleksandersen, "Google's Unfair Performance Advantage in Chrome *Ctrl. blog* (Jan. 2, 2022), <https://www.ctrl.blog/entry/chrome-google-dse-preconnect.html> [<https://perma.cc/M3L8-CVFY>].

61 "Android Open Source Project," *Android* (2023), <https://source.android.com> [<https://perma.cc/T2YN-PX38>].

62 Charles Arthur & Samuel Gibbs, "The Hidden Costs of Building an Android Device," *The Guardian* (Jan. 23, 2014), <https://www.theguardian.com/technology/2014/jan/23/>

years, Google has begun moving certain functionalities that traditionally resided in the OS out of “official Android” and into key applications such as maps and search apps and the Chrome browser that must be licensed as a bundle with “official Android.”⁶³ As a result, if a manufacturer builds a phone incorporating the open-source OS rather than “official Android,” the apps on that phone may experience performance glitches or lack certain functionalities they would have if running on the “official Android,” which always will be paired with the Google apps that provide those functionalities. This practice also means that the Android OS is not interoperable in an equitable way because it works better on phones with certain Google apps installed than it does on phones without those apps.⁶⁴

Google’s contracts respecting the use of Android have been found to violate the competition law of the European Union.⁶⁵ Of central importance was the bundling of the otherwise open-source Android operating system with proprietary apps such as Google’s Play store and search engine, among others, which must be preinstalled in order to license the “official Android” OS. Google’s bundles impede entry by competing stores, search, and others such as map applications because—despite some technical interoperability of the operating system—rival apps cannot get on to the operating system under equal terms due to contractual barriers that give various forms of preferential treatment to the Google apps as compared to rival apps.⁶⁶

If an original equipment manufacturer (OEM) is required to preinstall Google search as the default in order to license Android on the handset, then a competing search engine cannot equitably interoperate

how-google-controls-androids-open-source [https://perma.cc/2CGM-AYSD] (“The Android mobile operating system is free for consumers and for manufacturers to install, but manufacturers need a licence to install Gmail, Google Maps and the Google Play store”).

63 *Id.*

64 See Hiedhues *et al.*, *supra* note 11, at 941.

65 European Commission Press Release IP/18/4581, “Antitrust: Commission Fines Google €4.34B for Illegal Practices Regarding Android Mobile Devices to Strengthen Dominance of Google’s Search Engine” (July 18, 2018) (“Since 2011, Google has imposed illegal restrictions on Android device manufacturers and mobile network operators to cement its dominant position in general internet search.”).

66 See Heidhues *et al.*, *supra* note 11, at 933-96 (describing how contractual barriers require licensees to install a full suite of Google apps, give them prominence on the home screen, and make Google Search the default search engine at all search access points).

with that OS. The competing search engine requires the user to take the handset home, download, install, and choose a competing app as the default for that search engine to operate as the default on their handset. Because users typically do not change defaults, the competing app cannot effectively interoperate with the operating system. We call this a contractual lack of interoperability: even if there is no technical barrier preventing Bing from being used by consumers with Android handsets, Google's contract prevents users from having effective choice and further prevents Bing from having a fair chance to compete.

Adherence to equitable interoperability by the Android OS and store would require the elimination of those contracts so that rival apps have the technical means to interoperate without facing discrimination or inequities in accessing consumers. Such a policy would decrease barriers to entry for rival apps. If equitable interoperability were required only for "covered platforms," as proposed in the United States,⁶⁷ or for "Core Platform Services," as in the EU,⁶⁸ a small entering search engine would not be required to engage in equitable interoperability. The regulation would therefore permit such an entrant to contract with a device maker to be preinstalled—perhaps exclusively—on some share of its handsets.⁶⁹ Currently, however, Google's own contracts with handset makers foreclose entry by this method,⁷⁰ as the manufacturer would lose

67 "Augmenting Compatibility and Competition by Enabling Service Switching Act of 2021," H.R. 3849, 117th Cong. §§ 3(a), 4(a) (extending portability and interoperability requirements to "covered platforms").

68 Council Regulation 2022/1925, 2022 O.J. (L 265) 1, art 1.2 ("This Regulation shall apply to core platform services.").

69 Because even the small entrant's exclusive contract creates a barrier to any of the search engine for the relevant consumers, it is helpful to explain why the small entrant's contract is pro-competitive. Its small markets share means that the exclusive contract will generate more customers for the entrant, which in turn raises the quality of the small search engine, allowing it to compete more strongly in the future. Given the existence of a dominant firm, that sort of competition is very valuable for consumers. That benefit should be compared to potential harm in the form of foreclosed competition due to the exclusive contract. Because of its small size, the exclusive contract creates a barrier for relatively few consumers, allowing rivals plenty of market share in which to continue to compete.

70 Google recently has relocated some of the provisions requiring the installation of Google Search at all search access points into what it terms Revenue Share Agreements. As we explain in another Article, those new agreements appear to give manufacturers a choice as to which search engine to make the exclusive default. But in fact, the new contracts give a financial incentive to continue to make Google Search the default, and the manufacturers in any event remain bound by a different contractual provision to

access to Android. Elimination of the full suite of discriminatory Google contracts is necessary to achieve equitable interoperability in this case.

The search interoperability problem is different than many other interoperability problems because the barriers are both contractual and technical. An equitable interoperability mandate would emphasize the “equitable”—or non-discriminatory—part of the rule, in addition to technical solutions, to generate competition in this market.⁷¹ If Google complied with an equitable interoperability requirement, handset makers could sell Android handsets with any kind of competing apps on them, and all handsets would be fully functional. This would significantly lower barriers to entry in search, mapping, and other popular apps.⁷²

C. Google Ad Tech

Google plays an outsized role in the complex process by which “advertisers” like FedEx or New York’s Metropolitan Museum of Art place digital advertisements on web pages created by “publishers” like Golf Magazine (golf.com) or the East Anglian Daily Times (eadt.co.uk).

We focus here on advertising placed on the “open web,” in contrast

preinstall various google apps, all of which incorporate Google Search as the default. See Heidhues *et al.*, *supra* not 11, at 929-33.

71 This is not to say that the technical challenges to ensuring equitable interoperability are insignificant. Among other things, a technical committee would need to determine which elements of the Android OS are sufficiently central to ensuring interoperability with third-party apps that they should remain features of the open-source OS rather than being migrated into Google’s proprietary apps.

72 In our companion Article on the search market, we explain how Google has located key functionalities of Android not just in the operating system but also in some apps such as Google Maps and Chrome. See Heidhues *et al.*, *supra* note 11. Equitable interoperability would require that Google migrate those functionalities (as determined by a technical committee) back into the Android OS to the same degree as are the Google apps. The DMA includes a provision that arguably requires this. Article 6.4 requires gatekeepers to allow third-party apps to run on their operating systems by mandating that they “allow and technically enable the installation and effective use of third-party software applications or software application stores using, or interoperating with, its operating system and allow those software applications or software application stores to be accessed by means other than the relevant core platform services of that gatekeeper.” Council Regulation 2022/1925, 2022 O.J. (L 265) 1, art. 6.4. The requirement that gatekeepers permit “effective use” as opposed to degraded or cumbersome or ineffective use—is consistent with our recommendation that the interoperability here be “equitable.” If an app can interoperate with an OS, but only in a way that is ineffective considering the purpose and design of the app, then that interoperability cannot be said to permit “effective use” of the OS, nor would it be considered “equitable” under our definition.

to advertising that is placed within a platform operating as a “walled garden.” To illustrate the difference, imagine a reader who visits their own Facebook page and sees advertisements in their feed. Those ads show up because advertisers pay Facebook.com to place ads that are seen by people while they are using Facebook.com. That is a “walled garden.” By contrast, imagine a reader who navigates to Golf.com, opens the site, and sees an ad for putters on the home page. The ad likely appeared on the reader’s screen because Golf Magazine offered for auction that space at that particular time, and the putter manufacturer won the auction. Digital advertising placed through this method is deemed advertising on the “open web,” and the companies that together effectuate the offer, bid, and auction comprise what is termed the “ad tech stack.”

The various functions of the ad tech stack are depicted in the following schematic, which shows publishers on the left and advertisers on the right, along with the firms that represent and assist each side, respectively. Auction winners and prices are determined on an exchange that is located between the buyer and seller. Inputs from sellers offering advertising space come from the left side of the graphic, while information and bids from buyers who wish to place ads come into the exchange from the right side.

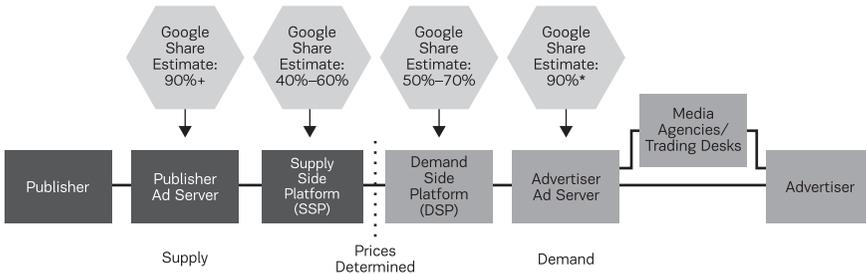


Figure 1. Digital Display Advertising: “the Ad Tech Stack”

Detailed descriptions of each of the functions shown in the figure above are beyond the scope of this Article, but two observations are important. First, as shown by the market share figures above the various functions in the stack, Google, through related companies, has a high share in each function in the stack. Second, Google’s presence across the entirety of the stack is highly unusual in an auction market.

As indicated by various authors,⁷³ a 2023 complaint by the Department of Justice,⁷⁴ and an investigation by the European Commission,⁷⁵ Google successfully monopolized the ad tech stack by acquiring businesses and making those businesses only interoperate, or interoperate well, with other Google businesses. As these sources allege, Google manipulated the demand-side platform (DSP) so that the exchange more quickly received bids from Google's own DSP than from those of rivals. The Google exchange charged an additional fee on bids from non-Google DSPs, but not from Google businesses. The Google video property, YouTube, only interoperates with the Google advertiser tool and not with rival tools that want to buy ads, as it had previously. The list goes on.

Some of these examples are what Susan Athey and Fiona Scott Morton call "platform annexation."⁷⁶ Their work describes a cluster of strategies that involve a platform acquiring a useful tool, and then degrading interoperability between the tool and rival platforms.⁷⁷ When a tool is popular and switching from it has some costs, this strategy can move a large bloc of users to the acquiring platform and lessen or eliminate multihoming.⁷⁸ In Google's case, such discrimination is argued to have either driven competing firms out of business or made them weaker and smaller.⁷⁹

If equitable interoperability were required of all Google's ad tech tools and functionality, including the publisher tool, the exchange, and

73 See *id* at 1-2, 18, 21-23; Dina Srinivasan, "Why Google Dominates Advertising Markets," 24 *Stanford Tech. L. Rev.* 55, 88-132 (2020)

74 See Press Release, U.S. Dep't of Just., "Justice Department Sues Google for Monopolizing Digital Advertising Technologies" (Jan. 24, 2023), <https://www.justice.gov/opa/pr/justice-department-sues-google-monopolizing-digital-advertising-technologies> [<https://perma.cc/WA8M-SU88>].

75 European Commission Press Release IP/21/143, Antitrust: Commission Opens Investigation into Possible Anticompetitive Conduct by Google in the Online Advertising Technology Sector (June 22, 2021), https://ec.europa.eu/commission/presscorner/detail/en/ip_21_3143 [perma.cc/F6FG-YR2W]

76 See Susan Athey & Fiona Scott Morton, "Platform Annexation," 84 *Antitrust L. J.* 677, (2022)

77 *Id* at 685-89, 691

78 *Id* at 688-89.

79 E.g., "Understanding the Digital Advertising Ecosystem and the Impact of Data Privacy and Competition Policy: Heading before the S. Comm. On the Judiciary," 116th Cong. 5-6 (2019) (statement of Brian O'Kelley, Founder and Former CEO of AppNexus, Inc.).

YouTube, competitors would be able to compete for customer demand on a level playing field. Publishers would be able to use multiple exchanges to ensure they were getting top dollar for their inventories of ad space, advertisers would be more likely to make the most valuable ad placements at the lowest possible price, and ad intermediaries of all kinds could compete to deliver these results to publishers and advertisers on an equal footing with Google's ad tools. This process would lower the margin earned by Google's platform, benefiting both advertisers and publishers.

Just as the FCC's registration program enabled entering equipment makers to connect to AT&T's wired network if they met certain standards, that same function must be carried out in the case of rival advertiser tools connecting to Google's exchange. Again, this can be solved by a regulator creating an interface for advertiser tools and exchanges to use, or the regulator constituting a technical committee of experts, entrants, and rivals to establish open APIs to achieve this functionality.

There is, however, a fundamental conflict of interest problem in the ad tech stack that is unrelated to interoperability, as is made obvious by the schematic above. Google works as the agent of the publisher, the agent of the advertiser, and the operator of the exchange that determines market-clearing prices. Google keeps the difference between what the advertiser pays and what the publisher receives; it has a strong incentive to raise prices, lower publisher payments, and make the price-discovery process costly. The take rate is therefore high. One solution to this exercise of market power is divestitures.

If divestitures were required as a remedy or occurred because a regulator determined there is a conflict of interest when a firm acts as the agent on both sides of a transaction,⁸⁰ then many parties would necessarily be involved in selling an ad. Interoperability across corporate boundaries would simply have to occur, or an ad could not be sold and placed. The industry would have a strong incentive to quickly

80 Cf. Letter from Elizabeth Warren, Sen., to the Hon. Lina Khan, Chair, Fed. Trade Comm'n 3 (June 29, 2021), <https://warren.senate.gov/imo/media/doc/Letter%20to%20FTC%20re%20Amazon-MGM%20Deal.pdf> [perma.cc/2RX3-Z5HM] (noting that Amazon's participation in various retail and retail-related functions "creates conflicts of interest throughout its online marketplace ecosystem that may provide it with the incentive and ability to harm competitors in unexpected ways that a narrowly-focused antitrust analysis may not anticipate or reveal").

work out APIs at the different interfaces to allow transactions to take place. Mandatory interoperability without discrimination would also prevent Google, or any other company with the same market share, from engaging in acquisitions that when combined with degradation of interoperability, would recreate its market power.⁸¹

D. The Apple Operating System

Many consumers single home on a mobile device, meaning they carry only one mobile phone. About half of users in the United States have iOS devices, though that percentage is concentrated in higher income brackets.⁸² Because Apple creates both the hardware and the operating system, it can share more functionalities with its own internal developers than with external developers. This has led to complaints by third-party developers such as Tile that Apple's integration of its AirTags with iPhone's Find My app discriminates against Tile's product.⁸³ Tile's product is a Bluetooth dongle that attaches to an item to help users discover that item's location.⁸⁴ When many users install Tile's app, they create a "finding network" of devices to help other Tile users locate missing items. Recently, Apple began pre-installing an app on its devices called "Find My," which promotes its competing AirTag product.⁸⁵ Because all iPhones have Find My on them, Find My has a larger tracking network than Tile enjoys, leading to a competitive disadvantage for Tile.⁸⁶ The near-field communications (NFC) chip that enables secure mobile payments from Apple's iPhone offers another example of asymmetric access to hardware. Apple does not grant third-party developers access to the iPhone's NFC chip, thereby ensuring that Apple

81 Athey & Scott Morton, *supra* note 77, at 685-89, 691.

82 See Ben Renner, "Survey: iPhone Owners Happier, Have More Money, Friends than Android Users," *StudyFinds* (Nov. 5, 2018), <https://www.studyfinds.org/survey-iphone-owners-happier-more-money-friends-android> [perma.cc/9ZEY-3HSF]; Federica Laricchia, "Number of iPhone Users in the United States from 2012 to 2022," *Statista* (Oct. 18, 2022), <https://statista.com/statistics/232790/forecast-of-apple-users-in-the-us> [<https://perma.cc/P3LT-ZGLC>]

83 See Sarah Perez, "Tile Bashes Apple's New AirTag as Unfair Competition," *TechCrunch* (Apr. 4, 2021, 2:51 PM EDT), <https://techcrunch.com/2021/04/20/tile-bashes-apples-new-airtag-as-unfair-competition> [perma.cc/743Z-JFM4].

84 *Id.*

85 See *id.* ("Apple is...leveraging its larger iPhone install base to help find missing items.").

86 See *id.*

Pay remains the only mobile payment application available to nearly one billion iPhone users worldwide.⁸⁷ This denial of interoperability is alleged to have stifled the growth of complementary or supplementary ecosystems of mobile payment tools for Apple devices.⁸⁸ And in 2019, Germany passed a law demanding that Apple grant NFC chip access to other mobile payment service providers in order to end Apple's anticompetitive practice.⁸⁹

Equitable interoperability would mandate that whatever interface was shared internally for use by developers at the dominant platform be shared with external developers on equal terms. Equivalent access to the OS and hardware would place internal and third-party developers on a level playing field and promote vigorous competition in the market.

E. The Apple App Store

The Apple App Store is another setting where rivals do not have equitable interoperability with Apple's iOS. The store currently works as follows: first, a developer submits an app to Apple for review, which prompts Apple to determine whether the app operates as it should, and whether it complies with conditions like content restrictions and privacy standards. Second, after Apple approves it, the developer may place their app in the Apple App Store. The developer will not pay Apple for distribution if it is a non-profit, or if the app delivers a good or service that is consumed offline;⁹⁰ the developer will pay Apple

87 "EU Considers Forcing Apple to Open iPhone's NFC Chip to Third Parties," *MacDailyNews* (Sept. 18, 2020, 12:21 PM) <https://www.macdailynews.com/2020/09/18/eu-considers-forcing-apple-to-open-iphones-nfc-chip-to-third-parties> [perma.cc/3R2J-KZUM]; Stephen Nellis, "Apple sees revenue growth accelerating after setting record for iPhone sales, China strength" *Reuters* (Jan. 27, 2021), <https://www.reuters.com/article/us-apple-results/apple-tops-wall-street-expectations-on-record-iphone-revenue-china-sales-surge-idUSKBN29W2TD?il=0> [<https://perma.cc/R772-AGU6>] ("Apple now has an installed base of more than 1 billion iPhones.").

88 Karen Webster, "Is it Time for Apple to Allow Others Access to the iPhone NFC Chip?," *Pymnts* (Dec. 21, 2020), <https://www.pymnts.com/news/payments-innovation/2020/time-for-apple-pay-to-let-others-access-iphone-nfc-chip> [perma.cc/G6KG-79A8]

89 Ben Lovejoy, "Germany Forces Apple to Let Other Mobile Wallet Services Use iPhone's NFC Chip," *9to5Mac* (Nov. 15, 2019, 5:22 AM PT), <https://9to5mac.com/2019/11/15/use-nfc-chip> [perma.cc/AJ64-GEHV].

90 See "App Store Review Guidelines," *Apple*, at 3.1.3(e) (2023), <https://developer.apple.com/app-store/review/guidelines/#goods-and-services-outside-of-the-app> [<https://perma.cc/FB32-L6CG>] ("Physical Goods and Services Outside of the App: If your

only a reduced fee if it is sufficiently small.⁹¹ Familiar “offline” apps include Chase Bank, Delta Airlines, and Tesla. These businesses pay nothing for their use of the store. If an app delivers a good or service consumed on the handset such as music, video, eBooks, or games, Apple charges developers 30% of the revenue generated by selling the app, subscription, and any “in-app purchases.”⁹² In-app purchases are sales within an app such as a book, a movie, a game, a costume in a game, higher status in a dating app, and so forth. Apple does not take a share of advertising in the apps it distributes—with at least one well-known exception, Google Search.⁹³

Spotify sells its app outside of iOS, where it offers various kinds of subscriptions and family plans and collects revenue.⁹⁴ A subscriber to Spotify can download the free app in the Apple App store and log in using their Spotify credentials to access the content purchased outside of iOS. This is known as a “reader app.”⁹⁵ Other popular reader apps include Netflix and Kindle. The reader app allows the user to purchase content without the 30% tax and yet consume it on their Apple device. But this strategy is only feasible for apps that are already popular enough that users are willing to navigate to a website outside of iOS. New apps or apps that offer goods or services that can be purchased on the spur of the moment (a costume in a game) rather than planned for (a Netflix subscription) may not find the reader app exception works for them. This was particularly true when Apple did not permit developers to

app enables people to purchase physical goods or services that will be consumed outside of the app, you must use purchase methods other than in-app purchase to collect those payments, such as Apple Pay or traditional credit card entry.”)

91 See “Apple Pay for Donations,” *Apple* (2023), <https://developer.apple.com/apple-pay/nonprofits> [<https://perma.cc/E9TF-8UWR>] (noting that nonprofit organizations are exempt from paying fees or commissions).

92 “Paid Application Agreement (Schedules 2 and 3 of the Apple Developer Program License Agreement)” *Apple*, at 4, <https://developer.apple.com/support/downloads/terms/schedules/Schedule-2-and-3-20220225-English.pdf> [<https://perma.cc/PGF9-YLVK>]

93 Thomas CLaburn, “What Brit Watchdog Redacted: Google Gives Apple Cut of Chrome iOS Search Revenue,” *Register* (Feb. 17, 2023), https://www.theregister.com/2023/02/17/google_apple_chrome_ios_revenue [<https://perma.cc/CC24-XH6E>]

94 See “Sign up for Free to Start Listening,” *Spotify*, https://www.spotify.com/us/signup/?sp_t_counter=1 [perma.cc/CGB2-8T8H] (enabling users to create an account online).

95 “Distributing ‘Reader’ Apps with a Link to Your Website,” *Apple* (2023), <https://developer.apple.com/support/reader-apps> [<https://perma.cc/2WEP-TQGJ>]

direct users outside iOS to buy content, but users had to learn where to buy content.

Compounding the problem, Apple itself sells services that compete with rival apps in the store that pay the 30% fee. For example, Apple offers games that compete with many gaming companies.⁹⁶ Apple Music competes with Spotify and Tidal. Competition among and between apps on a single platform obviously benefits consumers, but Spotify complains that Apple inhibits fair competition among apps on its own app store, at least when Apple distributes its own apps. According to Spotify, Apple gives its own music service an unfair advantage because it does not pay a 30% fee to itself and therefore enjoys lower costs, thereby undermining the fair competition among apps that benefits consumers.⁹⁷

There is no competition among stores on the Apple platform that might offer developers either lower fees or better-quality service. Developers would like the choice of distributing to consumers through rival stores that might engage in price competition with each other, driving down fees and creating innovation in services and quality. A carefully executed interoperability rule could stimulate the creation of a competitive marketplace of stores that distribute apps.⁹⁸ A regulator (or its technical committee) could design an interface for app stores and

96 See, e.g., "Texas Hold'em," *Apple* (2023), <https://apps.apple.com/us/app/texas-holdem/id284602850> [<https://perma.cc/CZ6C-X8B8>] (previewing the Apple App Store listing for Texas Hold'em and further identifying the seller as Apple itself)

97 Spotify filed a complaint to the EC challenging the legality of the 30% tax and the inability to distribute to Apple device users to except through the Apple store. The complaint itself was confidential, but Spotify created a web page meant to explain the complaint to the public entitled "Time to Play Fair." "Time to Play Fair," *Spotify*, <https://timetoplayfair.com> [perma.cc/4AUC-Y72N]. The page links to an animated cartoon that explains how Spotify has no choice but to use the Apple App Store and accede to the tax for in-app purchases, including the fee to upgrade to premium service. See *id.* Epic Games raised similar complaints in its lawsuit in the United States against Apple. See "Epic Games, Inc. v. Apple Inc.," 559 F Supp. 3d 898, 921 (N.D. Cal. 2021) ("Epic Games claimed that Apple is an antitrust monopolist over (i) Apple's own system of distributing apps on Apple's own devices in the App Store and (ii) Apple's own system of collecting payments and commissions of purchases made on Apple's own devices in the App Store.").

98 The DMA explicitly requires that operating systems such as Apple's iOS be designed to interoperate effectively with third-party app stores. Article 6.4 provides that a gatekeeper shall "allow and technically enable the installation and effective use of third-party software applications or software application stores using, or interoperating with, its operating system and allow those software applications or software application stores to be accessed by means other than the relevant core platform services of that gatekeeper." Council Regulation 2022/1925, 2022 O.J. (L. 265) 1, art. 6.4

publish the approved APIs that qualifying rival stores must use. The side of the interface used by the store would allow needed store functionality; Apple would ensure its operating system hooked to the APIs in the interface.

The regulator would issue licenses to third-party stores, ensure the interface promotes entry, and guarantee the interface remains equitable. Again, because of the importance of security and privacy on a personal handset, the regulator ought to require stores to obtain a license. A licensed store could then distribute any Apple-approved app. Likely, the regulator would require that Apple devices come with a meta-store app pre-installed where consumers could find and download any licensed store. To ensure the continued functionality and security of apps offered in iOS stores, Apple may sensibly continue approving individual apps for use on iOS, regardless of the store through which they are distributed. Licensed stores would only be permitted to distribute approved apps, which could protect consumers from malware. The individual app screening process, if administered by Apple, would require regulatory oversight to ensure continued nondiscrimination and a fair, cost-based fee.

Users purchasing an Apple device would then be able to install rival, licensed stores which might contain differently curated or cheaper apps. Rival stores might do more or less review of app content, offer better navigation systems to find apps, only offer free apps or apps with A+ privacy ratings, take payments in different ways, or have selections curated for certain interests or languages. Indeed, Apple itself might begin to offer more than one store to appeal to consumers with particular tastes. For example, a narrow Apple store might curate to only have the most popular apps, or a children's Apple store might be very strict about junk and pornography.

The store license plays an important role in this interoperability regime. The license allows a regulator to ensure that a store meets privacy, safety, and national security standards. Regulators will likely want input from operating systems concerning the standards for privacy and security that the regulator should require of stores. An important issue for the regulator is determining how to protect consumers from app stores that have the ability to share personal information of consumers with apps in the store. The regulator might condition a license on the store's adherence to a default level of sharing of personal

information that is very conservative. The regulator could also require the use of an authorized choice architecture if the store wished the user to agree to share more personal data.

With sufficient competition among app stores, Apple could set the fees for app developers and users in its own store however it wished, subject to existing law, by downloads, in-app purchases, corporate revenues, or anything else. Other stores could do the same. Developers who did not like the iOS App Store policies and fees could distribute through rival stores, which would compete for their business.

As with all the cases of interoperability we consider in this Article, we describe a regulation where there is no fee charged for the interface that gives access to a covered platform like iOS. This issue should be studied in more detail to determine the welfare consequences of different options. We note that, in our setting, the reason for the interoperability is because the market power of the covered platform is high, which means any fees must be regulated. Further, incentives to be studied include the response to interoperability by the platform. This response is likely to vary by the business model of the platform. A maker of a vertically integrated handset may have an incentive to raise its price if it no longer earns fees based on usage. A platform that monetizes through advertising will have different incentives.⁹⁹

Under the current market structure, apps have no alternative route to serve Apple users. With equitable interoperability of the iOS store interface, third-party stores would enter, develop brand recognition, and cultivate large user bases of their own. We envision marketplace-wide interoperability so that a store needs to work with only one interface and that interface is used by all participating operating systems. However, the apps in such stores will be specific to the OS on which they run. Over time, the existence of multiplatform stores may encourage entry of new operating systems because consumers' activity and data could stay in the store as they switch to new devices that might run on new operating systems. A consumer could switch to an entrant OS by buying the new device, installing the store, and logging in to their existing store account. The store could become a kind of interoperable 'middleware' allowing easy switching across operating systems.

99 See Federico Etro, "Device-Funded vs. Ad-Funded Platforms," 75 *Int'l J. Indus. Org.* 1,7 (2021).

F. The Android App Store

The interoperability issues with the Android store are conceptually similar to those discussed above with respect to iOS. The differences lie in business models and in the institutional details of store policies. Android is licensed by independent device makers,¹⁰⁰ so it is not as vertically integrated into hardware as iOS is. However, apps also go through an official Google approval process, and Google requires that the Google Play Store be preinstalled in a prominent location on authorized Android handsets. As Apple does, Google charges app developers 30% of sales in the store, whether for sales of the app or for in-app purchases.¹⁰¹

Google permits other app stores to be installed on a Google handset.¹⁰² For example, Samsung has an app store on its Android handset—the “Galaxy Store.”¹⁰³ As far as we can learn, Samsung charges the same 30% commission rate for app distribution, but this is a list price and negotiated discounts are offered.¹⁰⁴ The Galaxy Store’s share of Android app downloads allegedly “trail[s] far behind” that of the Play Store.¹⁰⁵ This example, however, demonstrates the technical feasibility of designing an interface that supports multiple stores, each containing authorized apps.

G. Amazon E-Commerce Marketplace

The network effects in e-commerce marketplaces are indirect: consumers want to go where there are more sellers, and sellers want to go where there are more buyers. Entering marketplaces thus face at least one difficulty in getting established—they need sellers listing goods in order to attract consumers. A seller will be reluctant to pay the fixed cost

100 See *supra* notes 61-64 and accompanying text.

101 “Service Fees,” Google, <https://support.google.com/googleplay/android-developer/answer/112622> [<https://perma.cc/W79K-8M5V>]

102 Alternative Distribution Options, Google Developers), <https://developer.android.com/distribute/marketing-tools/alternative-distribution> [<https://perma.cc/2XLQ-FCMZ>].

103 “Galaxy Store,” Samsung, at 5 <https://www.samsung.com/us/apps/galaxy-store> [perma.cc/45RP-X5AL]. Note that this study was funded by Apple.

104 Jonathan Borck, Juliette Caminade & Markus von Wartburg, “Apple’s App Store and Other Digital Marketplaces: A Comparison of Commission Rates,” *Analysis Grp.* 5 (2020), https://analysisgroup.com/globalassets/insights/publishing/apples_app_store_and_other_digital_marketplaces_a_comparison_of_commission_rates.pdf [perma.cc/8V9C-7UJB].

105 Complaint at 20, Epic Games, Inc. v. Google LLC, No. 320-cv-05671 (N.D. Cal. Aug. 12, 2020).

to list on a nascent marketplace because the returns could be low when there are very few consumers. However, the seller may use specialized software that allows it to load its store content—goods, prices, inventory, or images—just one time, and then link that software to an e-commerce site. For example, Shopify is a well-known tool of this type that interoperates with e-commerce sites like Amazon and Walmart.¹⁰⁶ This tool drastically lowers the fixed cost of listing on a new platform and allows the seller to run the sites almost as if they were one. The seller can add new products just once, and the products appear on all sites. This system allows the seller to keep track of listings, inventory, and offers in one place, while displaying products across many different marketplaces.

Thus, in the current system, different e-commerce sites interoperate with popular software tools for hosting e-commerce sites. Sellers' switching costs of moving sales from one platform to another are negligible, promoting multihoming by brands and stores. Such interoperability promotes competition between e-commerce sites. The interoperability that has arisen here works at the market level, with multiple tools interconnecting with multiple e-commerce sites.

Could a regulator improve interoperability in e-commerce? A regulator could certainly codify and publish industry APIs to ensure that they are not withdrawn or changed in an anti-competitive way. Further, a regulator could enforce the equitable aspect of interoperability. Larger platforms and tools will tend to want changes that advantage their own business, and these changes might reduce the functionality of smaller rivals. Further, the regulator could protect interoperability from degradation going forward. A dominant e-commerce site could engage in platform annexation by ending interoperability in an adjacent market for tools like Shopify. An interoperability regulation would permit the regulator to investigate if a dominant platform shut down interoperability or made it technically or financially costly for sellers or end users to multihome with competing retail sites.

Fulfillment functions occupy the other side of e-commerce platforms. Interoperability in fulfillment requires keeping track of a physical

106 See "Sales Channels," *Shopify*, <https://help.shopify.com/en/manual/online-sales-channels> [perma.cc/8DTF-CEDD] ("You can use Shopify to sell your products on different online sales channels. Sales channels represent the different platforms where you sell your products.").

object. Physical objects, unlike data, cannot be moved and shared practically without cost, and the location of warehouses and delivery trucks matters.¹⁰⁷ A seller might wish to fulfill its orders from multiple marketplaces through one warehouse to minimize inventory costs and take advantage of scale. This is straightforward if the seller is large enough to have economies of scale itself. Many sellers are too small to own their own warehouses and so need to purchase this service. Fulfillment services like DHL or FedEx have “open APIs” by definition because these freestanding delivery services wish to serve sellers from every platform. The Amazon fulfillment service, by contrast, need not have open APIs if it only delivers goods sold by its corporate sister.

Amazon, however, sells fulfillment services for sales on rival platforms through a service called Multi-Channel Fulfillment. Multihoming merchants who use rival e-commerce platforms to list and sell goods can purchase fulfillment services for those sales from Amazon using inventory that is located in an Amazon warehouse.¹⁰⁸ The seller instructs Amazon to deliver specific goods of the seller to the relevant consumer. Notice that interoperability runs the other way as well: a seller can use a rival fulfillment service—its own, or a third party—to deliver sales made on Amazon’s marketplace.

Again, does this leave any role for a regulator? We could first ask whether this service fully satisfies the criteria of equitable interoperability.¹⁰⁹ A regulator enforcing equitable interoperability is positioned to protect competition by preventing leveraging from one side of the interface to the other. For example, the Amazon marketplace might be able to use its marketplace search results to advantage its fulfillment service by more prominently featuring the products of sellers that use Amazon fulfillment. In that setting, fulfillment interoperability is not equitable because some choices are advantaged over others.

107 The physical element here is reminiscent of the problem of interconnecting with a regulated AT&T when wires and equipment needed to be connected at specific locations that required structures and maintenance—all of those being costly.

108 Gabriel Bang, “7 Benefits that Amazon Multi-Channel Fulfillment provides for Amazon Sellers” *Amazon Supply Chain* (Feb. 28, 2023), <https://supplychain.amazon.com/blog/7-benefits-that-mcf-provides-for-amazon-sellers> [<https://perma.cc/L8AA-A3CM>]

109 Amazon now offers unbranded packaging by default. See “Multi-Channel Fulfillment: FAQ” *Amazon*, <https://supplychain.amazon.com/support#unbranded> [perma.cc/J57J-2YMV] (“Multi-Channel Fulfillment is now automatically shipping in unbranded packaging at no additional cost.”).

The regulator could require that the marketplace not discriminate in its rankings, search results, or in any other method used to steer consumers against sellers who use third-party fulfillment. Likewise, the regulator could require the platform not to discriminate against any seller that chooses to list on rival marketplaces, set different prices, or offer different selections on rival marketplaces. The regulator could also ensure the platform doesn't use its fulfillment services to gather data about other sellers and their products that it then could turn around and use to compete against or undercut those sellers with its own products.

Today it appears that Amazon's e-commerce platform is interoperable on both sides, at least in a limited way: a merchant can use tools like Shopify to multihome across stores, keeping a uniform storefront in all of them. And if a merchant buys multi-channel fulfillment from Amazon, it can use that functionality to multihome its storefront across smaller e-commerce stores that might have poor fulfillment services.

A further area of regulatory interest is the use of seller data by Amazon and the extent to which it shares that data with other parties. This topic is beyond the scope of the current Article but thinking about how interoperability might apply to types of data is an important area for future research.

H. Looking Ahead: Google's Dominance Over the Internet of Things

The complaint against Google search from state attorneys general, led by Colorado, describes the concern that Google will gain an early monopoly over the Internet of Things (IoT).¹¹⁰ Because Google's Android operating system is the only popular mobile operating system which can be licensed, many makers of smart devices from refrigerators to cars to televisions are installing various Android OS's in their devices.¹¹¹ Market

110 See Complaint at 5-7, *Colorado v. Google LLC*, no. 1:20-cv-03715-APM (D.D.C. Dec. 17, 2020).

111 Android TV is a leader in the market for smart television operating systems. See "Android TV Market Size to Reach US\$ 231 Billion by 2026," *Globe Newswire* (Jan. 14, 2020), <https://www.globenewswire.com/news-release/2020/1/14/1970493/0/en/Android-TV-Market-Size-to-Reach-US-231-Billion-by-2026.html> [perma.cc/VVJ7-VGYX]. Porsche has added support for Android Auto to its vehicles' computers. Caleb Miller "Porsche Reveals New Infotainment System, Adds Android Auto," *Car & Driver* (June 18, 2021), <https://www.caranddriver.com/news/a36756380/porsche-newinfotainment-system-android-auto> [perma.cc/Z6RD-2K3F]. Samsung has released a smart refrigerator that runs Android. "Samsung's T9000 Smart Refrigerator Runs on Android, Includes Apps

power in device OS's allows Google to set licensing conditions that position Google to maintain its monopoly and extract rents from these industries in the future. The autonomous vehicles of the future may be built at a General Motors factory, but their profits may be primarily taken by Google.

Interoperability may prove a very helpful policy for the IoT. Cars that connect to road sensors and traffic lights, pipe sensors that connect to home thermostats, lights that connect to smart phones, and so forth have the potential to be useful to consumers. But network effects are likely to be strong due to the value of interconnection. Therefore, the market may tip in favor of Google, and limit competition in the future.

Equitable interoperability within the IoT could decouple the dominant operating system—Android—from the physical smart devices it runs on, allowing consumers to choose a physical device maker independently from the OS. In addition, open APIs and equitable interoperability with Android OS's could allow rival makers of devices access to consumers who participate in an Android network. Those device makers might choose to operate with rival OS entrants that have better ways to control cars, develop home monitoring systems, run advertising on televisions, and so forth.

A recent report from the EC evaluates not just the Android IoT landscape, but other platforms like Alexa and Siri that operate consumer and home devices.¹¹² The report concludes that competition is lacking in the space in part because third-party device makers are blocked from interoperating with proprietary OS's and with proprietary voice assistants, which the report describes as two separate choke points that could be made interoperable.¹¹³ Even in situations in which the third-party device makers are not literally blocked from interacting with the OS's and voice assistants, they can experience only partial interoperability which means they provide less functionality than similar complementary devices manufactured and sold by the company that

Like Evernote and Epicurious," *Gadgets 360* (Jan. 22, 2013), <https://gadgets.ndtv.com/others/news/samsungs-t9000-smart-refrigerator-runs-on-android-includes-apps-like-evernote-andepicurious-320610> [perma.cc/8HJ4-TDXQ].

112 See European Commission Press Release IP/21_2884, Antitrust: Commission Publishes Initial Findings of Consumer Internet of Things Sector Inquiry (June 9, 2021), https://ec.europa.eu/commission/presscorner/detail/en/ip_21_2884 [perma.cc/YYB7-A5XS] (discussing, among other things, the market for voice assistants).

113 *Id.*

operates that IoT ecosystem (Google, Apple, or Amazon). When the third-party device makers are weakened by lack of full interoperability, they are unable to provide robust competition in the market for complements to the dominant platform, which benefits the dominant platform and harms consumers of connected devices.

For example, everyone who currently purchases an Amazon Echo device is obligated to use Amazon’s Alexa voice assistant. If Amazon were required to make its voice assistant and its operating system interoperable, makers of smart speakers could offer consumers a speaker with a choice of Alexa, Siri, or “hey Google,” as the voice assistant (or none of these) installed and the speaker would not need to run on any particular OS. This would increase user choice and create competition across two markets—physical smart speakers, and voice assistants—where currently there is only a single market. In this way a user could choose to buy a speaker from any maker and pair it with their current smart home service. This is another example of a fast-moving new industry that could be protected from monopolization by careful interoperability regulation.

There are other areas that we have not addressed, or that will arise in the future, where mandatory interoperability could increase competition. For example, this Article does not address competition in cloud services.

VI. Interoperability in the DMA and in the Proposed U.S. Law

The DMA establishes conditions that could lead to equitable interoperability of the kind we describe. These regulations require core platform services (CPS) to allow consumers choice of defaults, technically enable apps and third-party app stores, and offer equivalent interoperability for third party hardware and software, among others.¹¹⁴ The DMA mandates contractual or technical interoperability in a number of its rules which may then drive increased contestability in several of the settings that we have discussed above. We briefly describe some of the similarities and differences between our proposed approach to interoperability and the approach adopted by the DMA.

The DMA generally takes a context-specific approach to interoperability. For example, Article 7 mandates interoperability in a

114 Council Regulation 2022/1925, 2022 O.J. (L 265) 1, art. 6(1)(f)

market with direct network effects, number-independent interpersonal communications services (i.e., WhatsApp, iMessage and the like).¹¹⁵ These services must make basic functionalities interoperable at no charge while preserving the level of security. Article 6(7) requires very general technical interoperability for core platform services.¹¹⁶ Article 6(3) requires a CPS operating system to allow users to choose default services, thus potentially removing an inequitable element of the interoperability between the OS's service and rival services.¹¹⁷

In contrast, this Article suggests that a gatekeeper operating system provide the same functionality to third party software that it provides to its own integrated version of the service. Such a provision means that a rival can offer all the functionality that the platform's own service offers to customers. Eliminating the situation where competitors obtain degraded technical interoperability may improve competition in apps like digital wallets, for example.

The DMA also mandates interoperability in some specific settings. For example, Article 6(4) requires a CPS mobile OS to permit competing app stores to interoperate.¹¹⁸ This is the case where the rule ends a contractual as well as technical prohibition on interoperability and allows competition among app stores. Such competition is particularly critical to establish contestability on platforms where users single home.

Articles 6(9) and 6(10) are slightly different. These require that the CPS supply real-time data to business users and allow end users to effectively port their data to a rival service;¹¹⁹ we discuss the importance of data portability to contestability in Section IV.E. Free real-time data portability helps rivals to compete on equal footing with integrated platform services. While the rival cannot connect directly to the platform as it could in a standard interoperability situation, by receiving a customer's real-time data feed, it can lower the cost to a customer of multi-homing. The interoperability created by the APIs that allows the data to flow permits the third party to offer services almost as if it were interoperating. One might think of this as vertical rather than horizontal interoperability, and it is therefore an important variant on our theme.

115 Council Regulation 2022/1925, 2022 O.J. (L 265) 1, art. 7.

116 *Id.* art. 6.7.

117 *Id.* art. 6.3.

118 *Id.* art. 6.3.

119 *Id.* art. 6.9; art. 6.10.

Finally, we note that interoperability has featured in legislation being considered in other jurisdictions. In the United States, the Augmenting Compatibility and Competition by Enabling Service Switching Act (ACCESS Act) (introduced in the House in 2021 and in the Senate in 2022)¹²⁰ would establish a committee at the FTC comprised of company representatives, neutral specialists, and potential entrants to design an interface with the desired functionalities. The FTC would approve the interface if it promotes entry, is nondiscriminatory, and does not preserve the market power of the covered platform. Separately, the American Innovation and Choice Online Act (AICOA), in prohibiting various forms of “self-preferencing,” would provide additional assurance that that interoperability is equitable through a prohibition against self-preferencing.¹²¹ The legislation establishing the Digital Markets Unit at Great Britain’s Competition & Markets Authority empowers the agency to create a bespoke code of conduct for each platform being regulated. Interoperability is one of tools the CMA could use in its effort to limit the effects of market power. These pieces of legislation, if enacted as introduced, would be positive steps toward pro-competitive uses of equitable interoperability.

VII. Enforcement

The key element to enforcement in the proposed U.S. framework is the balance between a technical committee comprised of industry representatives and the role of the regulator.¹²² Industry representatives and the dominant firm are well placed to design the interface because of their technological expertise and knowledge of market trends. And one of the tool’s best features is that the government can stand in the background during the design phase.¹²³ One might think that such a

120 H.R. 3849, 117th Congress (2021)

121 S. 2992, 117th Congress (2022) § 3(a)(2) (prohibiting platforms from limiting the ability of business users that offer goods or services that compete with those offered by the platform to access the same platform services and features as those made accessible to the platforms’ own products and services).

122 See “Augmenting Compatibility and Competition by Enabling Service Switching Act of 2021,” H.R. 3849, 117th Cong. §§ 6(c)-(d)(2021) (requiring the commission to constitute a technical committee that meets regularly to provide expert recommendations, but limiting the committee to an advisory role).

123 See “Augmenting Compatibility and Competition by Enabling Service Switching Act of 2021,” H.R. 3849, 117th Cong. § 6(c)(2) (delegating standard development to the technical committee while vesting the power to approve or reject standards with the commission).

committee could run itself, rather as a standard-setting organization (SSO) does, with no oversight. The economic incentives of the dominant firm, however, indicate otherwise. Because the dominant firm has a strong incentive to guide the standard to protect its monopoly and give itself an advantage in the marketplace, the regulator must have ultimate control.

Without the power to reject changes to the interface, the platform would be able to change it at will: as competing entrants begin to gain traction with consumers, they will find that the API changes in a way that just happens to degrade their functionality so that they are unable to attract users away from the dominant firm. It is critical that the regulator be empowered to delay the adoption of a proposed new interface if it suspects that it will not serve the public interest by promoting entry and competition. If, after investigation, the regulator finds that the interface entrenches the market power of the dominant firm and does not promote contestability, then the regulator should reject it and ask the committee to create a procompetitive interface.

We advise that any regulator be empowered to require a divestiture of the part of the platform that will restore competition if a platform repeatedly fails to comply with interoperability mandates. For example, the EC has been attempting to apply remedies to Google Search for a decade, yet the market structure is unchanged and Google's market power has grown. The divestiture of the Google Android mobile operating system into an independent, regulated entity would remove any incentive for Android to discriminate among technically interoperable apps and allow for entry into currently monopolized markets like general search.¹²⁴

VIII. Risks

A regulator could be slow. In a fast-moving sector, it will be important to update the interface to keep pace with technological change. Because the regulator must have the power to block new interface designs if they are found to be anticompetitive, it necessarily runs the risk of slowing the pace of innovation. A prudent law would establish a presumption that the recommendations of the technical committee will be automatically adopted by the regulator within some number of days unless the regulator actively rejects the new interface. The law also could allow the

124 See Heidhues *et al.*, *supra* note 11, at 939-45.

regulator to mandate timetables for the development and imposition of standards. This would require the regulator and technical committee to stay on schedule, while retaining the regulator's ability to protect consumers by rejecting changes that do not serve the public.

The regulated interface may limit differentiation among competitors. If the interface makes certain technologies or business models costly or impossible, then these will not arise naturally in the market. We recommend that the regulator or the technical committee consult regularly with market participants and allow the regulated interface to evolve in response to market needs. We note that under current proposals like the DMA and ACCESS Act, very few platform operators will be subject to possible mandatory interoperability.¹²⁵ Other, non-covered, digital platforms and businesses would be free to use the resulting interfaces, or not, as they prefer, so their innovation can take any direction.

Interoperability might harm consumers if it requires excessive data sharing. A frequently mentioned example is the way Facebook collects data by interoperating with many third-party websites through "likes" and logins.¹²⁶ If the system is designed to work on behalf of consumers, however, then the interface can be used to protect them. Legislation combined with privacy protection such as a well enforced General Data Protection Regulation (GDPR) may be able to prevent poor outcomes.¹²⁷

The equitable part of equitable interoperability may be difficult to enforce because the choices that lead to discrimination are buried deep within the firm or are hidden in an algorithm that few people understand. For example, determining if a social network is filtering content and posts in a neutral way may be hard. A law or regulation might benefit from containing a whistleblower provision so that employees inside the firm are compensated when they report violations

125 See *supra* notes 35-36 (citing to scope-limiting provisions).

126 Bennett Cyphers & Danny O'Brien, "Facing Facebook: Data Portability and Interoperability Are Anti-Monopoly Medicine," *Electronic Frontier Found.* (July 24, 2018), <https://www.eff.org/deeplinks/2018/07/facing-facebook-data-portability-and-interoperability-are-anti-monopoly-medicine> [<https://perma.cc/X4T9-YJ82>] ("The company tracks whenever you use one of the hundreds of thousands of websites and apps that use Facebook technology, and it uses those data to target ads.").

127 The General Data Protection Regulation (GDPR), a 2016 EU regulation enforced from 2018 onward, sets guidelines on companies' collection and use of consumers' personal data. See "Regulation" 2016/679 2016 O.J. (L 119) 1.

of the regulations. Ensuring that third parties are free to raise issues with public authorities, as is currently mandated within the U.S. and EU proposals, is also critical.

To maintain benefits to consumers, it is important not to design such committees to function the way SSOs do. SSOs are prone to domination by firms with market power that seek to use the SSO to maintain their market power. In particular, firms can exploit their participation in an SSO to direct the development of standards in a way that promotes their own market positions. Leading firms participating in the Third Generation Partnership Project (3GPP), for example, influenced the 3GPP to include their own patents in standards governed by the 3GPP.¹²⁸ Likewise, the World Wide Web Consortium (W3C) is dominated by Google because of Google's size and market power.¹²⁹ Consequently, the W3C advantages Google relative to its competitors.¹³⁰ These cautionary examples motivate the need for regulatory oversight in the background to prevent the benefits of interoperability being neutralized by the firm being regulated.

128 See Aija Elina Leiponen, "Competing Through Cooperation: The Organization of Standard Setting in Wireless Telecommunications," 54 *Mgmt. Sci.* 1904, 1906-11 (2008) (finding certain firms' entry into the 3GPP consortium increased the extent to which the consortium used these firms' technologies, suggesting that firms can use their membership in a SSO to promote their own market position); see also Aija Leiponen, "Clubs and Standards: The Role of Industry Consortia in Standardization of Wireless Telecommunications" (ELTA Discussion Paper No. 997, 2005), <https://www.etla.fi/wp-content/uploads/2012/09/dp997.pdf> [perma.cc/9P4G-ZJF4] (finding that firms that were well connected outside the 3GPP tended to have greater influence within the 3GPP and that large firms with market power tend to dominate the process of standard development); Rudi Bekkers, René Bongard & Alessandro Nuvolari, "An Empirical Study on the Determinants of Essential Patent Claims in Compatibility Standards." 40 *Rsch. Pol'y* 1001, 1010,13 (2011) (finding that involvement in the 3GPP's W-CDMA standardization process increased the probability that the process deemed a firm's patented technology to be essential to the standard and that "participants...systematically influence the content of the standard in the direction of their own patented technologies").

129 Thomas Claburn "Aggrieved Ad Tech Types Decry Google Dominance in W3C standards—Who Writes the Rules and for Whom?," *The Register* (July 17, 2020), https://www.theregister.com/2020%7/17/aggrieved_ad_tech_types_decry [perma.cc/8WLJ-YWDS] ("Google contributes over three times as many individuals as the next largest contributor (Microsoft) to the W3C.").

130 *Id.*, see also *Majority Staff of the Subcomm. On Antitrust, com. & Admin. L. of the H. Comm. on the Judiciary, 116th Cong., Investigation of Competition in Digital Markets: Majority Staff Report and Recommendations* 229 (2020) ("Though standards bodies like the W3C give the impression of being a place where browser vendors collaborate to improve the web platform, in reality Google's monopoly position and aggressive rate of shipping non-standard features frequently reduce standards bodies to codifying web features and decisions Google has already made.").

The regulator could be captured by industry. Although capture by the dominant firm should be difficult in an environment where the law explicitly calls for the interface to promote competition and erode the market power of the dominant firm, a regulator could become captured by a consortium of industry interests and approve interfaces that fail to generate as much competition as they could. To preempt the risk of capture, the technical committee's work should be transparent, and the committee should include multiple members from consumer groups and neutral public policy experts.

Interoperability is a behavioral remedy. It may be that today's digital platforms are so powerful they will be able to circumvent this regulation, just as Google has been able to evade EC remedies in the general search market, for example.¹⁵¹ Because the profits at stake are so large, it may be impossible for the regulator to apply a heavy enough fine, in a timely manner, to incentivize compliance. Having the ability to approve or halt changes to the interface is critical if the regulator is to protect entrants.

IX. Conclusion

Although much research remains to be done, we believe that a significant number of important competition problems generated by monopoly platforms may be ameliorated with the "supertool" of equitable interoperability. When carefully implemented, equitable interoperability breaks down entry barriers which creates entrants, which in turn creates competition and consumer choice. Interoperability transforms what might have been competition for the market into competition in the market, which is a more efficient and effective form of competition. As we have shown above, interoperability can be applied to many digital settings, from e-commerce to operating systems to social networks. An interoperability statute gives regulators a useful tool that may be able to control many cases of platform market power.

We recommend that the regulator should have the ability to apply interoperability and:

1. Identify settings where equitable interoperability is needed;

151 See Kevin Chan, "After Years of Grappling with Google, Europe Has Tips for US," *Associated Press* (Oct. 21, 2020), <https://apnews.com/article/google-antitrust-lawsuit-europe-tips-9b100e96d23849b742d27c457157b6bc> [perma.cc/U24M-YAY9] ("By the time the investigation wrapped up, Google had already made some changes so regulators didn't require a specific remedy to restore competition.").

2. If desired, constitute a technical committee that includes consumer representatives, rivals, potential entrants and neutral experts for each Core Platform Service or covered platform;
3. Charge the committee with creating (or develop an internal process that creates) an interface with APIs that promote competition in the market; committee processes should include guidelines on how to update the interface as needed;
4. Issue licenses to parties that wish to interoperate, requiring reciprocity and other security and privacy standards as needed;
5. Briefly halt changes to the standard to investigate if they are anticompetitive, and fully block them if the regulator finds they do not serve the public interest;
6. Enforce all of the above through revocation of licenses or fines of sufficient size to incentivize compliance; and
7. Require divestitures in response to repeated non-compliance.

The “equitable” portion of equitable interoperability is critical to include and enforce. The dominant platform has a financial incentive to bias the system in its favor. If the platform can also influence the design of the interface such that its attributes favor the dominant firm’s own technology, customer base, or other businesses, then entrants will not be competing on a level playing field. Therefore, strong oversight by the regulator is needed as well as meaningful participation by rivals and potential rivals and those representing their interests. Self-regulation will be insufficient to create and maintain contestability.

A frequent critique of regulation is that it inhibits innovation. In fact, there are many examples of settings in which standardized interfaces promote innovation by the businesses—and whole ecosystems—operating on a side of the standardized interface. Through a stable link to the platform, these businesses can attract customers when they invent attractive products. This profit motive is a strong financial incentive for firms to engage in innovation.

An attractive feature of interoperability is that the regulator may choose to task a technical committee with designing the interface, so the regulator need not be involved in product design in a fast-moving sector. We stress, however, that the regulator must have the authority to ensure interoperability produces vigorous competition. In this context, equitable interoperability can become a form of oversight of industry-designed interfaces. We have referred to “equitable interoperability” throughout as regulation, but it could just as easily be thought of as a governance scheme.

Chapter 4.

Entry and Competition in Mobile App Stores

January 26, 2024*

Entry by rival app stores on the two currently available mobile operating systems is an exciting potential benefit of the European Union's Digital Markets Act (DMA). Apple and Google will need to share the technical specifications of their interfaces with developers and offer them the same functionalities they give to their own stores. The DMA also allows developers to disintermediate the legacy stores entirely by mandating downloads from the web to handsets. These changes should stimulate price competition—resulting in fees falling from the current 30 percent—and competition in variety and features.

Privacy and security will be important issues, with the question of who is permitted to offer rival stores being critical. Good enforcement by the European Commission will be necessary to balance gatekeeper rules restricting dangerous services with the need for contestability.

The paper concludes with examples of rival app stores that can be expected to enter. Stores will differentiate through curation, such as stores for children, for those trying to reduce their carbon footprints or for those seeking to use public services in a particular country. Some stores will innovate through alternative payment schemes—for example, a newspaper store that enables per-article pricing and pioneers

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innovative data-sharing policies. Lastly, developers such as Epic have long stated their desire to offer stores with innovative technology.

1. Introduction

On 25 January 2024, Apple said it would introduce new rules for its Apple App Store in Europe, including charging lower rates for in-app purchases, adding new fee of €0.50 per app download, and adding a method to authorise rival stores.¹ These dramatic changes are in response to the European Union's Digital Markets Act (Regulation (EU) 2022/1925), which opens up the possibility of increased innovation in app stores on mobile devices. But, as always, innovation and the attendant benefit to consumers will only happen if the regulation is enforced well. Today, Apple's App Store is the only app store for the iPhone. On Google Android handsets there is one mandatory app store, Google Play, and limited ability for others to enter.² The result is that more than 95 percent of Google Android downloads are through Google Play (Northern District of California, 2021a). Because users typically single-home on a handset, the result is a duopoly mobile operating system market featuring monopoly app stores. These monopolies offer a one-size-fits-all curation and poor quality, with inaccurate search results, ads cluttering the experience, and malware in the store. Unlike app stores, stores that consumers patronise in both non-digital and other digital contexts are differentiated; they vary in business models, their curation is targeted to satisfy the needs of distinct groups, and/or they make different trade-offs between price and quality. Furthermore, they must provide a good experience if they want to keep their consumers. The DMA increases contestability so that these beneficial aspects of competitive markets can apply to app stores.

Today, the gatekeeper app store is the only route by which a developer can reach a user of an iOS handset (the operating system used for mobile devices which are manufactured by iPhone), and almost

1 See Apple press release of 25 January 2024, 'Apple announces changes to iOS, Safari, and the App Store in the European Union', <https://www.apple.com/newsroom/2024/01/apple-announces-changes-to-ios-safari-and-the-app-store-in-the-european-union/>.

2 Google permits rival app stores to be installed on its devices, but they have inferior technical capabilities, Google pays developers not to use them and they cannot serve as a user's default or main app store because the code inside Google Play is broadly needed for app functionality. See *Epic Games v. Google*, Northern District of California (2021a).

the only route available to distribute to a Google Android handset. Gatekeeper app stores set rules for developer access to the store; these include security requirements, functionality tests, rules concerning communication with end users and usage fees. These fees are paid by the app developer (business user) when it sells an app in the store or sells any digital content consumed through the app. This is distinct from a service purchased in the app but consumed outside, such as airline tickets. The advertised rate charged by both app stores is 30 percent of the revenue earned by the app developer. The 30 percent level has no cost basis provided by either gatekeeper; legend has it that the 30 percent was chosen by Steve Jobs as the original commission Apple took on every \$0.99 song it sold (passing on \$0.72 to major labels and \$0.62 to independent labels).³ Many business users – for example, Spotify – do not sell their content on mobile platforms because of the size of the fee.⁴

Recent market, regulatory, and antitrust pressure on the 30 percent fee has caused both stores to create exceptions that can qualify developers to pay lower rates. During the pandemic, both gatekeepers lowered their fees to 15 percent on the first \$1 million in revenues by a developer and this lower rate is also charged on subscriptions after the first year.⁵ Larger developers bargain with the gatekeepers, perhaps agreeing to distribute exclusivity through Google Play in exchange for reduced fees. It was revealed during the Epic versus Google trial that Spotify negotiated a 4 percent commission with the Google Play store to continue selling its content there.⁶

Both app stores will only distribute apps that have passed the

3 Jack Nicas, 'How Apple's 30% App Store Cut Became a Boon and a Headache', *New York Times*, 18 November 2020, <https://www.nytimes.com/2020/11/18/technology/apple-app-store-epic-games-fortnite.html>.

4 Oliver Darcy, 'Spotify is going to war with Apple after the App Store rejected its big new feature', *CNN Business*, 1 November 2020, <https://www.cnn.com/2022/11/01/media/spotify-apple-app-store-reliable-sources/index.html>.

5 Sarah Perez, 'Apple dropping App Store fees to 15% for small businesses with under \$1 million in revenues', *Techcrunch.com*, 19 November 2020, <https://techcrunch.com/2020/11/18/apple-to-reduce-app-store-fees-for-small-businesses-with-under-1-million-in-revenues/>; Chaim Gartenberg, 'Google will reduce Play Store cut to 15 percent for a developer's first \$1M in annual revenue', *The Verge*, 16 March 2021, <https://www.theverge.com/2021/3/16/22333777/google-play-store-fee-reduction-developers-1-million-dollars>.

6 Sean Hollister, 'Epic CEO Tim Sweeney: the post-trial interview', *The Verge*, 12 December 2023, <https://www.theverge.com/23996474/epic-tim-sweeney-interview-win-google-antitrust-lawsuit-district-court>.

platform's app authorisation process. This process involves verifying that the app functions as advertised, does not contain illegal, defamatory, discriminatory, or other objectionable content, includes safeguards against users posting such content and adheres to data privacy and security guidelines.⁷ For example, the store will reject an app that uses proprietary APIs that reach far down into the operating system to gather private data.⁸ Currently both mobile ecosystems spend considerable effort on the app approval process because a significant part of the value of the handset to users comes from the app ecosystem. Apple requires developers to enroll in the Apple Developer Program to be able to publish an app. This membership costs \$99 per membership year.⁹ Google has a similar programme which costs \$25 per year.¹⁰ In 2022, the Apple App Store rejected 1.7 million apps, which is 27 percent of the 6.1 million apps it reviewed.¹¹ Google similarly disallowed 1.43 million apps in 2022.¹² Forty percent of Apple's app rejections have to do with 'completeness' (bugs, broken links, incomplete information, etc.) but apps are also rejected for misleading users or for having unclear data access requests.¹³ Developers whose apps are rejected may use an appeals process.

Apple's team consists of 500 experts and reviews about 100,000 apps every week.¹⁴ The review process at Google is considered less stringent than Apple's and relies more on automation than human reviewers.¹⁵

7 See Apple Support, 'App Store Review Guidelines', <https://developer.apple.com/app-store/review/guidelines/#introduction>.

8 See Apple Support, '2022 App Store Transparency Report', <https://www.apple.com/legal/more-resources/docs/2022-App-Store-Transparency-Report.pdf>.

9 See Apple Support, 'Choosing a Membership', <https://developer.apple.com/support/compare-memberships/>.

10 See Play Console Help, 'How to get started with Play Console', <https://support.google.com/googleplay/android-developer/answer/6112435?hl=en>.

11 See Apple Update of 16 May 2023, 'App Store stopped more than \$2 billion in fraudulent transactions in 2022', <https://www.apple.com/newsroom/2023/05/app-store-stopped-more-than-2-billion-in-fraudulent-transactions-in-2022/>.

12 *Google Security Blog*, 'How we fought bad apps and bad actors in 2022', 27 April 2023, <https://security.googleblog.com/2023/04/how-we-fought-bad-apps-and-bad-actors.html>.

13 See Apple Support, 'App Store Review Guidelines', <https://developer.apple.com/app-store/review/guidelines/#introduction>.

14 See <https://www.apple.com/app-store/>.

15 Sarah Perez, 'Google Play tightens up rules for Android app developers to require testing, increased app review', *Techcrunch.com*, 9 November 2023, <https://techcrunch.com>.

Google recently announced that it plans to increase investment in the automated approach and recently launched a new ‘real-time’ app scanning system to combat malicious sideloaded apps.¹⁶ Developers now must also test their applications with a minimum of twenty people for at least two weeks before publication.¹⁷ There are more security problems in Google’s store than there are in Apple’s.¹⁸ For example, according to Kaspersky, an anti-virus software firm, there were 600 million malware downloads in 2023 on Android.¹⁹ While both Apple and Google claim they keep dangerous or illegal content out of their stores, it is interesting to observe that Apple has 1.8 million apps in its store while Google Play has 3.6 million, suggesting that some of the Google apps do not satisfy Apple’s criteria. To the writer’s knowledge there is no regulator that evaluates the quality and security of the gatekeeper app stores.

2. The DMA and App Stores

Because a monopoly app store is a bottleneck in getting services and content to single-homing end users, app stores are listed in the Digital Markets Act (DMA) as gatekeepers. The decision by the European Commission in September 2023 designated both Apple’s App Store and the Google Play Store as Core Platform Services that must comply with the rules in the Act.

The DMA contains at least seven rules that improve contestability and fairness in app stores. The profusion of rules designed to help app developers escape the control of the app store is notable. Many European-based app developers have been vocal about their lack of

com/2023/11/09/google-play-tightens-up-rules-for-android-app-developers-to-require-testing-increased-app-review/.

16 Zack Whittaker and Jagmeen Singh, ‘Android’s new real-time app scanning aims to combat malicious sideloaded apps’, *Techcrunch.com*, 4 November 2023, <http://techcrunch.com/2023/11/04/google-play-android-real-time-app-scanning-sideload-apps/>.

17 *Android Developers Blog*, ‘Ensuring high-quality apps on Google Play’, 9 November 2023, <https://android-developers.googleblog.com/2023/11/ensuring-high-quality-apps-on-google-play.html>.

18 Matthew Humphries, ‘Google Play Store Is Main Distributor of Malicious Apps, Study Reveals’, *PCMag*, 12 November 2020, <https://www.pcmag.com/news/study-reveals-googles-play-store-is-main-distributor-of-malicious-apps>.

19 Alanna Titterton, ‘Google Play malware clocks up more than 600 million downloads in 2023’, *Kaspersky Daily*, 9 November 2023, <https://www.kaspersky.com/blog/malware-in-google-play-2023/9579/>.

power relative to the American gatekeepers; the focus on app stores in the DMA may reflect this political economy. In addition to rules enabling entry of rival app stores, there are additional rules that permit apps to disintermediate app stores entirely. Disintermediation occurs when the developer instructs the user to buy its content on the web through a browser but consumes that content on the handset. The ability for a developer to use a distribution route that is not the gatekeeper's app store, such as sideloading, is also mandated. These disintermediation options will be particularly attractive to developers if the regulations allowing entry and competition fail to generate competitive prices and quality in app stores. App developers may also want to use their right under the DMA to seek fair, reasonable and non-discriminatory (FRAND) terms from the monopoly store if entry of rivals fails to materialise. The DMA approach to app stores thus feels a bit like a 'belt and suspenders' strategy. Below is an explanation of these seven rules, edited lightly to retain only the portions relevant for app stores.

2.1. Contestability through Interoperability with the OS

In the DMA, the foundation of the entry right for rival app stores is Article 5(8) which prohibits tying between Core Platform Services.

The gatekeeper shall not require business users or end users to subscribe to, or register with, any further core platform services... as a condition for being able to use, access, sign up for or registering with any of that gatekeeper's core platform services...

This prohibits the gatekeeper from requiring the use of the gatekeeper's app store in order to use its operating system CPS. The basic Article allowing the entry of rival app stores, permitting those stores to be a user's default and permitting sideloading, is DMA Art. 6(4):

The gatekeeper shall allow and technically enable the installation and effective use of third-party...software application stores...interoperating with...its operating system and allow those... software application stores to be accessed by means other than the relevant core platform services of that gatekeeper. The gatekeeper shall, where applicable, not prevent the downloaded third-party...software application stores from prompting end users to decide whether they want

to set that downloaded...software application store as their default. The gatekeeper shall technically enable end users who decide to set that...software application store as their default to carry out that change easily.

We see in the last sentence of Article 6(4) a nod towards dark patterns and the consumers who respond to them. The DMA repeatedly makes it clear that gatekeepers must comply in an effective way and not one that tries to preserve the status quo by tricking consumers.

It is one thing to mandate a store must be allowed, but another to ensure that the gatekeeper does not attempt to disadvantage those rival stores relative to its own. DMA Article 6(7) requires that rival stores have the same access and functionality as the gatekeeper's own service and further specifies that a rival app store must get this access and functionality free of charge:

The gatekeeper shall allow providers of services, free of charge, effective interoperability with, and access for the purposes of interoperability to, the same hardware and software features accessed or controlled via the operating system as are available to services provided by the gatekeeper. Furthermore, the gatekeeper shall allow business users, free of charge, effective interoperability with, and access for the purposes of interoperability to, the same operating system, hardware or software features as are available to, or used by, that gatekeeper when providing such services.

2.2. Contestability through Disintermediation of the Gatekeeper

DMA Article 5(4) explicitly permits an app developer to disintermediate the app store:

The gatekeeper shall allow business users, free of charge, to communicate and promote offers, including under different conditions, to end users acquired via its core platform service or through other channels and to conclude contracts with those end users, regardless of whether, for that purpose, they use the core platform services of the gatekeeper.

To give a practical example, a social networking service could list its app in an app store where a user can discover it. Once opened, the

app can say: ‘Subscriptions are available for €9.99 at our website by clicking on this link here. You are welcome to subscribe through the app store for €12.99. This higher price includes the 30 percent fee charged by the Apple/Google store’ (Sunderland *et al*, 2020).²⁰ Under current rules, a developer is not permitted to provide information about lower prices or off-store purchase channels. The new rights would allow the social networking app in the example to pay no fees to the app store, though it would bear the cost of running its own website and processing payments there.

DMA Article 5(5) then explicitly permits the user who acquired the content for less outside the app store to consume it on the handset:

The gatekeeper shall allow end users to access and use, through its [App Store], content, subscriptions, features or other items, by using the [app] of a business user, including where those end users acquired such items from the relevant business user without using the [App Store] of the gatekeeper.

In Apple’s terminology this is known as a ‘reader app.’ Apps with significant brand recognition such as Netflix and Kindle have already been able to negotiate for and obtain a reader app. The DMA makes this facility universal. Continuing with the example above, the user who purchases outside the store for €9.99 can then download the social networking app, log in using the credentials established outside, then read and post content on the handset.

A major complaint from app developers has been the 30 percent commission charge by both Apple and Google for distribution through the app store. This commission has been enforced and automatically collected by requiring the use of the store’s payment system and not one belonging to the app or some other third party. DMA Article 5(7) ends this tie and allows the developer to disintermediate the payment service:

The gatekeeper shall not require...business users to use...a payment service, or technical services that support the provision of payment services, such as payment systems for in-app purchases, of that [app store] in the context of services provided by the [app developer] using that gatekeeper’s [app store].

20 See also Ashley Gold, ‘Spotify previews new EU app with App Store bypass’, *Axios*, 24 January 2024, <https://www.axios.com/2024/01/24/spotify-eu-dma-app-store>.

The ability to use a different payment processing function could be an equilibrium choice or it could be a useful outside option for bargaining. The efficient choice for a developer will depend on the cost of running rival stores as well as the ability for users to discover apps in those stores. The law allows for a choice between selling on the web, distributing through a rival app store that collects payments under competitive terms, or staying in the gatekeeper's app store.

The law also requires that a developer be able to get onto the handset without going through the gatekeeper app store. Today this is known as sideloading. A user navigates to a web page using their browser and then clicks to download and install the app on their handset. Sideloading is not possible on iOS devices but is enabled on Google Android. The Google procedure, however, comes with a long series of alerts and checks warning the user of the danger of installing an unauthorised app on the handset. DMA Article 6(4) states that app stores must

allow those software applications or software application stores to be accessed by means other than the relevant core platform services of that gatekeeper.

This rule is not specific as to what the alternative route must be and therefore leaves some choice to the gatekeeper. As noted above, Google permits sideloading already. If Apple does not want to allow sideloading because of the security risk, it will have to develop an alternative. If rival app stores were pre-installed on iOS, this would provide means other than the gatekeeper store for business users to get on to the mobile operating system.

2.3. Fairness

Lastly, DMA Article 6(12) mandates that app stores must set FRAND terms for access and prices:

The gatekeeper shall apply fair, reasonable, and non-discriminatory general conditions of access for business users to its software application stores listed in the designation decision.

This is the fallback for a developer who faces the kind of tactic that Apple used in the Dutch case when the company allowed developers to use rival payment functions (likely costing very little) but then

raised the developer's costs again by imposing a new 27 percent fee on developer revenue.²¹ The result of the all the antitrust enforcement and commitments was therefore a negligible change in the 30 percent fee paid by developers. The Netherlands Authority for Consumers and Markets is now pursuing an excessive pricing case under Dutch competition law which may possibly be superseded by 6(12) of the DMA in March 2024.

3. App Store Strategies

In this section, I provide some suggestions of possible app stores that would have an attractive business proposition and therefore an incentive to enter. The value of some rival app stores will be in curation. Today's app stores have millions of apps, but most of them are apps in which any given user is not interested. An app store that contained a curated set of apps based on a user's interests might be attractive. A store could attract users with a curated set of apps geared around a community interested in functionality, located in a geography, or otherwise having specialised demand. Any niche content that is sufficiently attractive to users could be successful as there is no need to build network effects at the store level; rather, the store rides on the two-sided network effects already created by the CPS. Recall that under the DMA, a user must be able to have more than one app store on a handset. Consequently, there are no barriers to setting a niche app store as the default and installing the Apple or Google app store in addition for more mainstream or generic content. A second way in which a rival app store can add value is through lower fees and more creative ways of handling payments. A third strategy is through more creative use of technology.

I will take the above categories in turn and provide some hypothetical examples of app stores that might be demanded by developers and/or users. I will use the names of real corporations to fix ideas, but stress that I have not asked these corporations if they are working on any such projects.

3.1. Creative Curation

A 'Green Store' could contain apps that help users lower their carbon footprint. There might be no payment innovation in such a store at all,

21 John Porter, 'Apple proposes 27 percent commission in Dutch app store dispute', *The Verge*, 4 February 2022, <https://www.theverge.com/2022/2/4/22917582/apple-netherlands-antitrust-27-percent-commission-alternative-in-app-payment-systems>.

but rather its value proposition would lie in curation. The best apps for navigating public transit would be included. The store would evaluate the electric scooters available for rent in many cities across Europe and include the one with the greenest profile in the store. The food delivery service with the lowest carbon footprint and the coffee shop with the best recycling record could obtain more customers by participating in the review process of the store. Restaurants, banks and other brick-and-mortar options could be similarly evaluated, as could digital businesses. All advertising in participating apps could be required to be carbon neutral.²²

An obvious candidate for an alternative app store is one set up by a parent for a child's device. A parent might want a store that has age-appropriate content that is very carefully chosen by a certain brand – for example, Disney. The store could include Disney content as well as other apps geared for children. If the child downloaded an app from the Disney store by themselves, parents would not worry that it could be harmful or inappropriate. A parent might well want to remove all other app stores from the handset the child uses, so it is critical that the handset works without the gatekeeper's store. A Disney store might want to experiment with payment models that allow a parent to buy 'points' to give to their child which the child could spend on content in the store, for example.

A government could establish a store that contains all the apps available for interacting with government authorities in that country. There might be federal, state and municipal apps for managing pensions, property taxes and parking tickets to name a few. A citizen of Belgium does not want to sort through millions of apps to find the ones useful for him or her. A citizen could more easily discover useful digital services by browsing the Belgian government app store. Perhaps by entering a home address, relevant apps for a user's state and city could be surfaced or could market themselves to the relevant users.

Security in the store might be determined by the government of Belgium and then some apps might be able to share citizen's data between them (with permission). Naturally the government does not want to lose tax revenue by paying a distributor any significant percentage of revenues collected in the store, so the freedom to choose and manage a payment processor is critical to success.

22 See <https://scope3.com/>.

3.2. Lower Payment for Developers

Presently, both app stores charge online gaming companies 30 percent of in-app purchases. Games like Candy Crush, Fortnite and Roblox are free to play but charge for additional levels, powers, better odds, or access to loot boxes. The app store keeps 30 percent of the payments users make as they play. A Steam gaming app store could offer popular games while charging developers only 10 percent of in-app purchases, or even less if competition drives down those fees. The app store need not have any more capabilities than incumbent app stores to attract developers, rather, it is the lower fee that causes developers to want to distribute (perhaps exclusively) through such a channel. Once enough popular content is available in a gaming store, such a store becomes a good place for an entering developer to distribute. A company like Valve, which already has a gaming store (Steam) for PCs, could distribute the games of others as well as develop its own gaming apps for the mobile market. A developer with niche content may not be able to induce customers to transact on a web page; a rival store could provide a frictionless distribution process at low cost. The certainty of having access to consumers at a lower cost will incentivise innovation by both app stores and apps.

A company with enough existing games may be able to attract users to a proprietary app store that contains only its own content. King Games (maker of Candy Crush, now owned by Microsoft) owns many popular mobile games. A King app store would allow the company to stop paying 30 percent of its revenue to gatekeepers and instead use that money to build and run its own store and cross-promote its own games within that store. Games with sufficiently well-known brand names and large installed bases will help business users migrate end users away from legacy app stores to these new options.

3.3. Creative Payment Models

An association of newspapers could run a cooperative news store that contained the individual apps of each newspaper. Users could subscribe to one or more publications and pay through the store, which could be run as efficiently as possible so that the newspapers keep close to all the revenue rather than only 70 percent. The store would establish data policies with consumers that permit more interaction between the subscriber and the newspaper, something that is often restricted

in gatekeeper app stores.²³ Such a store could offer alternative revenue models such as ‘per article pricing’ using the method of payment the user has registered with the store. Today when clicking on a link to an interesting article and finding that the newspaper is behind a paywall, a user can either buy an annual subscription, or not read the article at all. This likely results in lost sales from casual readers who do not want to accumulate many expensive subscriptions. However, such a user might be perfectly happy to pay a small amount like 30 cents to access that single article of interest. With technologies already in use, a store could allow participating newspapers to offer micropayments for access to individual articles. This business model would allow newspapers to increase their revenues and the reach of their brands, while staying in control of their customer relationships.

The American Express card could run a store for its card holders that offers useful apps for rich people and those who travel frequently. The American Express card would be the payment method for all purchases in the store. The store would carefully curate apps to appeal to AmEx users who might be particularly interested in new innovations, luxury versions of products and services, apps geared towards events like tennis tournaments, and so forth. Apps that want to promote their services to card holders in exchange for discounts or special offers would be selected by the store, and those purchases would take place through the American Express card lodged with the store.

3.4. Creative Uses of Technology

Automakers might want app stores that contain both apps they market to the drivers of their vehicles, but also apps that help drivers use and maintain their vehicles. Data sharing within the store might be appropriate for safety reasons. Some apps in the store might need to connect to the vehicle and therefore have special technical characteristics.

Up until now, this article has distinguished between apps and app stores, but it may be better to think about any individual software service as lying somewhere on a continuum between them. For example, a

23 See Apple Support, ‘About privacy information on the App Store and the choices you have to control your data’, <https://support.apple.com/en-us/102399>; EU notice of antitrust proceedings in case AT.40716 - Apple - App Store Practices, initiated 16 June 2020, https://ec.europa.eu/competition/antitrust/cases/dec_docs/40716/40716_13_3.pdf.

game like Minecraft might start out as an app, but could be developed to allow users who design new tools or costumes to sell them to other users within the game. Such a game could create a marketplace within it where gamers can buy new experiences within the game — a bit like mini games — thus making a small gaming store within the original app.

Epic Games wants to have its own app store through which it can both avoid the 30 percent fee charged by the Apple and Google stores and have more control over technology. It plans to develop the Metaverse, a virtual world that is the vision of Epic's CEO Tim Sweeney. His idea of the metaverse is fundamentally different from the present gaming environment.²⁴ Today, users engage in disconnected entertainment experiences such as Fortnite (which is operated by Epic), Metaverse (Meta) and Roblox (a gaming platform). In the future, Sweeney wants to replace proprietary technology with open standards, file formats and networking protocols so that all systems can interoperate and the user experience becomes seamless. Service providers like Epic and Roblox would negotiate terms with operators to ensure they have direct consumer relationships.²⁵

Epic brought monopolisation cases against both the Google and Apple stores in the United States in an effort to break their control and obtain the right to launch an app store.²⁶ Epic lost the case against Apple in 2021; nine out of ten of its claims were dismissed.²⁷ Led by Utah, 36 states filed a lawsuit in 2021 alleging that (1) Google imposes technical barriers that limit third-party developers from distributing apps outside the app store and (2) requires developers to use Google Billing as a payment's processor²⁸ (Google Billing forces app developers to pay up to 30 percent of their revenues to Google).

24 Patrick McGee, 'Tim Sweeney: Epic will fight Apple and Google to keep the metaverse open', *Financial Times*, 26 May 2022, <https://www.ft.com/content/e13ce526-0e33-4ca2-9699-184d0138eada>.

25 Alex Heath, 'Epic Games CEO Tim Sweeney thinks 'every politician should fear' Apple's power', *The Verge*, 8 December 2022, <https://www.theverge.com/2022/12/8/23500363/tim-sweeney-epic-games-ceo-interview-apple-app-store-google-legislaton>.

26 *Epic Games v. Google*, No. 3:20-cv-05671 (Northern District of California, 2021a); *Epic Games, Inc. v. Apple Inc.*, 4:20-cv-05640-YGR (N.D. Cal.).

27 *Epic Games, Inc. v. Apple Inc.*, No. 20-cv-5640 (N.D. Cal.), judgment entered 10 September 2021; *Epic Games, Inc. v. Apple Inc.*, Nos. 21-16506, 21-16695 (9th Cir.), judgment entered 24 April 2023.

28 *Utah et. al. v. Google*, No. 3:21-cv-05227 (Northern District of California, 2021b).

Private Section 2 cases in the United States often settle because it is more profitable for all parties to share the monopoly profit than it is to give a substantial share of that profit to consumers by competing. It is therefore not surprising to learn that small developers and Google reached a settlement where Google would put \$90 million in a fund for developers that earned less than \$2 million from 2016-21.²⁹ Likewise, Match Group, a former Google partner, also announced a last-minute settlement.³⁰ Google will take 11 percent of Match's subscription revenue and 26 percent of its in-app purchase revenue on transactions using Match's own payment systems or Match will owe Google its standard 15 and 30 percent fees for transactions that use Google's in-app purchase system. The similarity of these headline numbers to the standard Google terms (given the cost of running a payment system) suggests Match did not gain from the settlement. But if Google wanted to establish a new "benchmark" for other developers, a settlement that does not change Google's effective fees combined with additional confidential consideration for Match would be the right choice.

Epic did not settle because the CEO sought the ability to run his own store that would control both payment and technology; a financial payout from Google would not have satisfied this goal.³¹ That left Epic as the sole developer in the case, which it won in December 2023³² (however, there is a risk that the jury's decision is overturned entirely by an appellate court or the Supreme Court when Google appeals). Google also settled with all 50 US state AGs for \$700 million and remedies that are reportedly like those agreed to by Match, namely User Choice Billing and a somewhat easier sideloading process.³³ The option for a rival app

29 *Reuters*, 'Google to pay \$90 million to settle legal fight with app developers', 1 July 2022, <https://www.reuters.com/technology/google-pay-90-million-settle-legal-fight-with-app-developers-2022-07-01/>.

30 Jay Peters, 'Match drops out of Google Play antitrust showdown', *The Verge*, 31 October 2023,

31 Sean Hollister, 'Epic CEO Tim Sweeney: the post-trial interview', *The Verge*, 12 December 2023, <https://www.theverge.com/23996474/epic-tim-sweeney-interview-win-google-antitrust-lawsuit-district-court>.

32 See Epic Games press release of 11 December 2023, 'Epic v Google Trial Verdict, a Win for All Developers', <https://www.epicgames.com/site/en-US/news/epic-v-google-trial-verdict-a-win-for-all-developers>.

33 Sean Hollister, 'Google to pay \$700 million and make tiny app store changes to settle with 50 states', *The Verge*, 19 December 2023, <https://www.theverge.com/23994177/google-states-ag-google-play-antitrust-settlement>.

store to enter on Google Android in both the United States and Europe might increase the response to the DMA.

Entrant Governance and Distribution Regulations

The strategies above assume that users trust the entering app store to follow all relevant laws and regulations concerning privacy, security, safety of data and so forth. However, if the app store market is opened up by the DMA, it seems likely that some untrustworthy store operators could try to take advantage of the rules to enter and exploit consumers at either a technical or commercial level. The law contains provisions allowing the gatekeeper to safeguard against the first of these risks by taking steps that are strictly necessary and proportional to safeguard the integrity of the operating system:

The gatekeeper shall not be prevented from taking, to the extent that they are strictly necessary and proportionate, measures to ensure that third-party software applications or software application stores do not endanger the integrity of the hardware or operating system provided by the gatekeeper, provided that such measures are duly justified by the gatekeeper.

The text of DMA Article 6(4) places the burden on the gatekeeper to both show the measures are strictly necessary and proportionate and to ‘duly justify’ them to the regulator. These requirements are critical to establishing contestability because a gatekeeper could easily make claims such as ‘all entrants endanger the integrity of the operating system’ and the like. Without limits on this strategy, security claims would be an effective way to block competition.

Apple and Google will have to establish a procedure for certifying that the app stores that connect to their CPS’s satisfy European safety and privacy standards.³⁴ These gatekeepers may affirmatively want to authorise rival app stores to keep their users safe. On the other hand, gatekeepers may prefer not to authorise rival app stores because users will be more likely to stay with incumbent stores if entrants seem unsafe. If users are afraid to use rival app stores, gatekeepers will benefit. By contrast, strict entry criteria can allay those fears and promote entry. For

34 Perhaps gatekeepers can ask the Commission to further specify that process under DMA Article 8(2).

this reason, effective compliance may require that gatekeepers create a list of proportionate criteria, including minimum security requirements, that an entering store must meet, as envisioned in DMA Art. 6(4). Then the gatekeeper could carry out the review, making sure to use a process that is transparent and unbiased. The fee the gatekeeper charges must of course be reasonable and cost based.

An alternative approach could be to outsource the review process to approved third parties. Outsourcing is particularly attractive if the entering store has proprietary features it would like to keep confidential as it competes with the gatekeeper's store. The gatekeeper could select third party consulting or accounting firms with the requisite skills to carry out all or part of the authorisation process according to the criteria established by the gatekeepers. Multiple businesses offering the authorisation process would assure rival app stores of cost-based pricing and lack of bias. Authorisation should not just include technical and security criteria but also review the suitability of corporation itself to have access to end users; entrants should have appropriate governance, financial stability, transparency of ownership, ability to compensate users in case of breach, and so forth.

Apps will still need to be approved in the normal way by the gatekeeper. Gatekeepers will have to show that their app approval process is unbiased and cost-based, or this step could be abused in a way that reduces contestability and fairness both in the app market and in the app store market. Indeed, the existing app review process is critical for the easy entry of stores specialising in curation. If an entering store simply organises and surfaces the apps its group of users wants while continuing to use the gatekeeper's payment system, there is no technological change caused by such a store. Because the apps in the rival store have been approved by the gatekeeper and continue to pay the gatekeeper, it is hard to imagine a principled objection by the gatekeeper to any element of this strategy; it simply improves the user experience for those users that choose to download the store.

Some apps will choose to be exclusive to one app store because it has favourable terms or provides a strategic partnership. It seems inconsistent with the goals of contestability and fairness for gatekeeper stores to require exclusivity from third-party apps exactly because the most popular apps could help rival stores gain traction with users. The DMA does not directly prohibit other popular apps of the gatekeepers

themselves, eg Gmail, from being exclusively distributed through the gatekeeper's store. It is not clear to me how the DMA will affect the distribution of apps that are themselves Core Platform Services, for example Youtube and Google Maps. However, if many apps choose an exclusive distribution strategy, this increases the likelihood that users will want multiple app stores on their handset. Multihoming will become common.

User multihoming raises the question of search costs for users trying to find a particular app. If a user opens her default store to search for a particular app and the store does not have it, can the store let her know which stores do carry that app? Such a functionality clearly improves the user experience. But more importantly, it strengthens entrants' ability to be an attractive default store. If a user must carry out a separate search in each store to find the app she is interested in, she will begin in the store with the greatest number of apps, which is likely to be the legacy store. Once the user is in the legacy store, if she does not find the app she is looking for, she will likely be offered a substitute which she may choose and download because of both choice architecture and search costs. The original app that she was searching for then loses that sale. This pattern of behaviour will make it much harder for entrant stores to attract developers and therefore users. If, by contrast, the entrant store can inform a user of the existence of a searched app in a different store, that entrant store becomes an attractive 'first port of call.' This functionality requires app stores to share the data on which apps they distribute at what prices in a public manner, just as video streaming services do in the US.³⁵

Note that the entering app store cannot sell the app it does not distribute, nor otherwise benefit from the listings of other stores. Indeed, a listing is likely to send the user away, and therefore benefits stores that share their data and distribute many apps. A universal search functionality therefore benefits everyone: users, entering stores, developers, and large legacy stores. While mandating universal search in a setting in which consumers multihome may seem obvious, it has been controversial in the past – for example, in the airline industry. Big airlines have refused to push out their flight schedules to metasearch

35 Streaming service Roku, for example, has a universal search functionality that provides a list of which streaming services distribute a particular film, for example, under which type of subscription, or for what price if it is a pay-per-view offer.

sites such as Kayak and Flight Penguin while doing so for limo services and other complements.³⁶ This was the case even though the metasearch sites did not sell any tickets or charge the airline any fees, but simply linked users to the airline's own site to buy the ticket. Reducing user search costs is not typically a profitable strategy for a provider with market power. Gatekeeper stores may therefore claim some combination of lost ad revenue, trademark infringement, or breach of existing agreements as reasons not to share listing data. The Commission may have to affirmatively approve the sharing of store data and/or suggest that withholding it could be a competition violation. Additionally, to maintain this functionality as the market develops and entrant stores grow, sharing app lists could be required to obtain annual authorisation for a rival store, as well as be a requirement for legacy stores.³⁷

The distribution of rival app stores is an interesting problem. How will users obtain such a store? One option is that gatekeepers are required to offer a 'store of stores' in which they distribute authorised rival app stores. Another is that those approved rival stores are located within the legacy app store where they can be easily found by users alongside apps. A third is that rival stores are sideloaded from the web. The first two options require the gatekeeper to include authorised entrants in reaching customers, which is against its financial interests. The third puts the most hurdles in the path of the entrant, but also requires more technical work from the gatekeeper to maintain security while permitting entry, as is required.

Many of the stores we expect to see entering at first will specialise in curation only, meaning that they will only be distributing apps that are already approved by each gatekeeper. Such stores are particularly safe from a technological point of view. Moreover, they also comply with the

36 Jack Nicas, 'Travel Websites Allege Delta Air Lines Is Shutting Them Out', *Wall Street Journal*, 20 May 2015, <http://www.wsj.com/articles/travel-websites-allege-delta-air-lines-is-shutting-them-out-1432094461>.

37 Recital 47 of the EU Database Directive (Directive 96/9/EC): "protection by the *sui generis* right must not be afforded in such a way as to facilitate abuses of a dominant position, in particular as regards the creation and distribution of new products and services which have an intellectual, documentary, technical, economic or commercial added value; ... the provisions of this Directive are without prejudice to the application of Community or national competition rules"; Ben Amunwa, 'Do no harm: ECJ finds in favour of meta-search engines in 'database right' dispute', *Law, mostly*, undated, <https://lawmostly.com/2021/06/14/ecj-cjeu-meta-search-engines-content-aggregator-database-right-online-intellectual-property-competition-eu/amp/>.

privacy and content policies of each gatekeeper (e.g., no pornography). Because such stores are just bundles of approved apps that do not harm the gatekeeper's reputation in these ways, it may be sensible to require the gatekeeper to distribute that kind of rival store in its gatekeeper store, or in its 'store of stores' if it chooses to create one. Such rivals will then be easily discoverable by users and can be downloaded without any friction. The same may be true for stores that change only the payment method they use, but otherwise simply curate a group of approved apps. This strategy also raises no difficult issues for the gatekeeper.

An approach that existing developers may use is to update a popular flagship app already distributed in the legacy app store. The new app could take advantage of the elimination of gag and anti-steering rules to guide consumers to additional apps outside the legacy store. The flagship app will explain, promote and steer a consumer to an offer that is available through a link outside the legacy app store. The offer would be attractive in some way –lower prices or greater benefit—which would cause the user to click to obtain the update to the app. For example, a user could open their favourite gaming app and see a link to a version of the app that offers more powers, free features, or extra points. When the user clicks on the offer, they are taken to the web where they download a new version of the app. This app would contain within it the ability to surface and obtain other games and to accept payment – the critical functionalities of a store.

In other words, there is no fixed boundary between an app and a store, but rather a progression of functionality. Rival stores may start out as new versions of a gaming app with an alternative payment system. This strategy provides access to the installed base of the popular app and reduces user friction. The app can then grow over time to offer more games inside itself, marketplaces and social functionalities as business users learn what works and what users want. In this narrative, the path from a single app to a store is a continuous one, rather than a discrete jump. Such a path would enable the rival app store to continue to distribute its app in the legacy store and allow the millions of users in that store to easily discover it. But users who then upgrade gain the advantages of competition because of the better offers and functionality they can now choose within that store.

Apps that do something technologically innovative raise more difficult distribution issues because they may not fit the policies of the existing legacy app store and therefore cannot be discovered by users on that

channel. These rivals may have to use the alternative channels the law provides. Apple has argued that allowing sideloading raises security concerns (Apple, 2021). It is worth noting that platforms have overcome the technology dimension of this problem in the past. Both the macOS and Windows allow users to purchase apps from many sources.³⁸ Sweeney points out that “it’s the operating system kernel that provides the security” by preventing apps from accessing data and services they aren’t allowed to access.³⁹ But sideloaded apps might also violate the content standards of the gatekeeper which come in two types. A gatekeeper’s aesthetic standard (e.g., a game called ‘Covid’) serves as a dimension of differentiation and is likely not a concern in a sideloaded game or store. Other store standards, such as the prohibition of illegal gambling or apps selling counterfeit goods, could be part of the rival store authorisation rules because such rules protect end consumers from danger. Rival stores would require authorisation to operate on the gatekeeper regardless of the channel through which they were distributed.

The fact that app stores will pay no fee for interoperability with the software functionality of the core platform service (CPS) requires discussion (DMA Art. 6(7)). The topic of optimal access fees has a long literature in regulatory economics (e.g., Laffont and Tirole, 1993). The benefit of optimal access fees is that they create the right levels of investment and innovation on both sides (Tirole and Bisceglia, 2023). The DMA recitals indicate that the European Parliament found a lack of innovation on the side of the gatekeeper despite the large rents flowing to gatekeepers. Therefore, one purpose of the DMA is to rebalance rents to provide returns to investment and innovation on the business users’ side where innovative potential may be unrealised.⁴⁰ This argument may explain the European Parliament’s choice to mandate access at no charge in so many places in the DMA. Moreover, to the extent the European Parliament feels the corporations in question violated the antitrust laws

38 Chance Miller, ‘Apple’s head of security speaks out against iPhone app sideloading in new interview’, 9to5Mac.com, 18 November 2023, <https://9to5mac.com/2023/11/18/apple-head-of-security-iphone-app-sideloading/>.

39 Sean Hollister, ‘Epic CEO Tim Sweeney: the post-trial interview’, *The Verge*, 12 December 2023, <https://www.theverge.com/23996474/epic-tim-sweeney-interview-win-google-antitrust-lawsuit-district-court>.

40 Teh and Wright (2023) demonstrated that in the context of competitive platforms where business users (sellers) multihome and users single home, welfare outcomes are not optimal and are particularly harmful to the business users.

to obtain their market power, it may not be equitable to then permit them to collect yet more profit from business users. In addition, a fee of zero is much easier to administer and enforce than many different fees over which the parties litigate for years. If Apple or Google charge fees to rival apps, such business will have higher accounting costs than Apple's or Google's versions of those businesses⁴¹ and would therefore be less viable when competing against them. This harms both contestability and fairness. The same holds true for app stores. Because the outside option for the business user (disintermediation of the app store) is so good, an entering app store that pays extra fees to the gatekeeper on top of its own costs may not be competitive in the marketplace, whereas an app store whose fees are driven only by the costs of running the store will be.

5. Next Steps

New app store entrants are entitled to operate using these business models beginning in March 2024 when Core Platform Services must comply with the DMA. An entering app store that wants to attract consumers in March must get ready beforehand. It must build its software, work out its value proposition to users and develop a business model. The first requires engagement with the gatekeeper mobile operating systems. Business users must receive from the gatekeepers all the technical specifications needed for an app store to interoperate with the operating system. Business users will also want to know what security checks the gatekeeper plans on performing, which will involve corporate processes such as insurance and governance of the security of data and review of the underlying code. Gatekeepers will need to establish clear timetables for app store reviews. If gatekeepers are unprepared or unwilling to disclose this information to app store entrants before March 2024, then entry will necessarily occur later, thereby delaying the benefits of contestability and fairness to both business and end users. Moreover, if there is any problem with a gatekeeper's plan such that a competent rival store is not able to exercise its rights in March of 2024, then that gatekeeper will have failed to comply with the DMA and the Commission may open compliance proceedings. Significant fines could result, or, in the case of multiple infractions, structural remedies such as divestiture of the app store

41 Unless the subdivisions of the gatekeepers are required to include opportunity costs in their internal cost counting and managerial decisions to fully reflect those net profits.

could be imposed. For this reason, it is prudent for gatekeepers to start engaging with entrants before the deadline so that the interface they offer in March functions correctly and has proportionate entry criteria.

It is also possible that the surplus unlocked by allowing app stores to enter, differentiate and innovate is sufficiently large that gatekeepers decide it is more profitable to benefit from this new world rather than fight it. Such a calculation might be more likely if gatekeepers face regulatory or legal requirements in more than one jurisdiction. For example, litigation in the US may require Google to make significant changes to the way it treats rival app stores. There are surely economies of scope to running one app store interface that is compliant in all jurisdictions. Apple's revenue primarily comes from non-app store sources such as the sale of hardware; the company's hardware and services will be more valuable if users can discover and use more innovative apps in the Apple ecosystem. If both gatekeepers determine that making rival app stores work well is, all things considered, the most profitable strategy, then they will have a reason to comply. The regulator's role would become easier in this setting, though technological choices would no doubt remain contentious. In either case, effective enforcement by the European Commission will be critical to the existence and functioning of rival app stores and the timing of their entry.

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Chapter 5.

Apple's Exclusionary App Store Scheme: An Existential Moment for the Digital Markets Act

March 6, 2024*

The Digital Markets Act (DMA) comes into full force in the European Union on 7 March. Article 6(4) requires Apple to permit third-party app stores to distribute apps on its iOS devices. After explaining why this requirement is important, we show that there are good reasons to believe that Apple's proposed approach to compliance will not meet the objectives of the DMA, and most probably impede entry by rival stores as well as stifle innovation.

The Importance of App Store Choice

The DMA's requirement that Apple offer its users the choice of using alternative app stores reflects the importance of such stores for driving quality and innovation. In recent years, the number of apps that users have been installing on their handsets has declined. This is the case despite the increasing number of applications of all kinds that make a handset more useful. Among the reasons for this decline could be the low quality of the discovery process and the lack of innovation in distribution. All apps are distributed through one large monopoly

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store that has limited functionality; finding an app involves searching through millions of apps using the store's search function, the resulting recommendations are themselves distorted by advertising; and the store is not tailored to the needs of particular apps or users.

This situation is not good for either app developers or consumers. Innovation and store variety are needed. Rival app stores could improve the user experience in curation and search by carrying only a subset of apps and offering users a different value proposition. Rival stores could be run by a large corporation with a particular business model, such as Disney in curation of apps for children, Pinterest in curation of apps for creativity, or American Express in distribution of apps for frequent travellers. New models of stores could spring up – for instance, a store which would offer a discount for subscription to multiple online newspapers, or a store run by a government with helpful apps for its citizens. Rival stores could also simply compete by charging lower fees to developers.

Users might want to make one such store their default while multihoming across others, or they might even want to single-home on a rival store rather than use the cluttered legacy store run by the gatekeeper. Parents may wish to give their children easy access to only a child-centred store, for instance.

All of these options represent innovation, which is a core goal of the DMA, and one that the European Parliament feared was being harmed by incumbent gatekeepers. Enabling effective access to third-party stores is designed to increase contestability on the platform with resulting improvements in price, quality, and innovation that will benefit end users as well.

Apple's Proposed Approach to Compliance

As part of its general DMA compliance measures, Apple is indeed opening up its devices to entry by third-party app stores at a technical level. However, it has proposed accompanying measures that will substantially hamper the likelihood and effectiveness of such entry. (We summarise the new fees for apps and app stores in Table 1.)

To understand the following, it is important to keep in mind an important feature of the new scheme proposed by Apple. It will be possible for app developers to continue to benefit from the same terms that are currently offered by Apple. At first sight, this seems

uncontroversial and a good way to ensure that there are no losers from the introduction of the new tariffs. However, the old terms will *only* be available for apps distributed *exclusively* through the Apple App Store. For any app wishing to use an alternative app store, the new tariffs apply. These include a minimum fee of, effectively, €0.50 per user per year. As we will see, this will generally act to stifle the development of attractive alternative app stores.

Apple’s terms will also hinder competition from ‘proprietary’ app stores: app stores that specialise in the apps produced by one or a small number of developers. Overall, our analysis indicates that the main category of app stores that will be successfully created are those which distribute apps that Apple has decided not to carry: gambling, pornography, and some forms of unsavoury dating. These entrants may establish a bad reputation for all alternative app stores in the minds of users. By blocking the entry of more positive store categories, the Apple rules severely constrain the path of innovation, to the detriment of both business users and end users.

Category	Existing fees	Alternative fees Required if distribute > 0 downloads through a rival store
Physical goods Amazon, Uber	0	.50 * (annual users across all stores – 1 million)
Ad-supported media Instagram	0	.50 * (annual users across all stores – 1 million)
Commission on Apple app sales and in-app purchases (including payment processing)	30%	20% +.50*(annual users across all stores – 1 million)
Commission on Apple subscriptions (including payment processing)	15%	13% +.50*(annual users across all stores – 1 million)
Rival store fee	NA	.50 per annual user

Table 1. Summary of Apple’s annual fees for large commercial developers. (As we understand them. Simplified for easier comprehension.)

The Impact of Apple’s Proposed Pricing Scheme on Developers

To analyse the economic effect of Apple’s pricing scheme, we first look at its impact on the incentives of popular ‘free’ apps: typically, apps that support off-handset activities or apps that are supported by advertising. In the first category, we include apps that are used by companies like banks, physical stores, and so on, to connect to their customers as well as apps that sell non-physical goods and are therefore not subject to the current

App store fee such as those of Amazon, Deliveroo, and Uber. In the second category are content apps supported by advertising such as social media and some new apps such as Facebook, Instagram, and Sky News.

These apps have never paid, and currently do not pay, any fees whatsoever to reach their end users through iOS. As discussed above, it will be possible for such app developers to continue to benefit from the same terms. However, if they choose to distribute through an alternative store they must choose the new terms of the Apple store, which in turn means they will have to pay €0.50 per user per year. Moreover, *this fee is calculated on all installs regardless of the app store in which the downloads occur*. That is, the app developer must now pay €0.50 for each of the Apple App Store users it previously served for free.

For example, Deliveroo today pays no fees to Apple to distribute its app on iOS. If Deliveroo exclusively distributes through the Apple App Store after 7 March, it can stay on the existing tariff and continue to pay nothing. Suppose, however, that Deliveroo wants to access users in a gaming store that has agreed to promote the food delivery company in an innovative way. In that case Deliveroo must move to the new Apple terms. When Deliveroo offers its app in this rival store, the company will have to pay €0.50 for every user (after the first million) that it serves through the Apple App Store as well as for every user downloading the app through the alternative gaming store. With this scheme Apple has placed a new distribution charge on downloads through the Apple App Store – but *only if the developer patronises a rival of Apple's store*.¹

The Apple pricing scheme effectively means that any app developer with millions of existing downloads will become liable for a very substantial annual fee to Apple the moment it decides to work with a rival app store. In economic terms, therefore, Apple has 'taxed' its rivals' entry. When a rival app store is nascent and has an uncertain future, the developer will likely not gain that much initially from distributing through the store. Apple's effective tax on such popular apps using a rival store is thus likely to deter them from doing so.

Worse still, we understand that the Apple rules prevent the developer from returning to the previous terms (namely, zero cost of distribution in the Apple App Store). Therefore, the developer is not only facing a significantly increased cost for its distribution through the Apple App

1 F. Scott Morton and Z. Abrahamson (2016), "A Unifying Analytical Framework for Loyalty Rebates", *Antitrust Law Journal* 81 (2016): 777.

Store, but one that it cannot reverse—despite the significant risk. The rules therefore create a very substantial disincentive for apps that have a large installed base in the Apple App Store to even experiment with a new entrant.

The Impact of Apple's Proposed Pricing Scheme on Stores

One can therefore predict that these popular apps will not wish to distribute through rival app stores. But is this such a problem? After all, smaller apps with fewer than one million installs will not face the same disincentive. Isn't this enough to foster entry?

We believe this to be unlikely, and certainly a lack of access to popular apps will make entry by a new entrant app store very much harder. New app stores will need to offer some, or even several, of these existing popular apps to build credibility, grow, and begin to develop their own network effects. We see this phenomenon of needing at least a few 'big names' in retail settings where particular brands or 'anchor stores' play an outsized role in attracting users. More generalist stores will need popular apps to create an appealing value proposition to end users, and this may also be true for specialist stores. Without the biggest social media, finance, e-commerce, and transportation apps, any alternative app store specialising in that arena will be limited to catering to very niche tastes. In this environment, rival app stores will have a hard time contesting Apple's monopoly position.

Apple may claim that apps that pay zero in distribution fees to Apple today will not be attractive to an alternative app store anyway because the fees they can charge will need to be close to zero – which cannot cover the costs of the alternative store. This, too, is over-simplistic. Of course, a rival generalist store needs to earn revenue in some way. But we have seen that these apps would likely bring benefits beyond any app store fees they pay. There may also be the potential that some app stores will enter as part of a wider business proposition of a bigger brand, and are therefore not intended to be profitable in their own right. Moreover, this is not Apple's decision to make; it is up to the entrant to choose its business model and value proposition, and it should do so without interference from the incumbent monopolist.

Part of the issue here which Apple is exploiting is that the success of third-party app stores depends on the independent choices of a

wide group of app developers. In aggregate, they would gain from a coordinated move to higher-quality and more innovative app stores, since this would allow these app stores to quickly build their credibility with end users and benefit from network effects. But each developer, acting alone, will not wish to make that move until others do. And there is no potential for the ‘winners’ in this process to subsidise any ‘losers’. Thus, app developers face a coordination problem. Apple’s pricing scheme exacerbates that coordination problem, which will in turn favour its own App store. Overall, Apple’s rules may constitute a violation under Article 8 of the DMA, as their effect is to circumvent contestability in app stores on iOS.²

Finally, it is important to recognise that under Apple’s new business terms, app developers that currently pay a 30% commission on sales of digital goods will be able to access lower rates (20%, see Table 1), or move to third-party app stores that compete by offering lower commissions. However, these changes will still trigger the €0.50 annual fixed fee per user, and thus many such apps may well still be worse off under the new terms. This is likely to include many popular ‘freemium’ apps which have a large installed base, and currently cover their costs by upselling in-app purchases to a small proportion of those users. Under the new terms, the new €0.50 fee per user may well outweigh the reduced upselling commissions.

Blocking Proprietary Stores

In addition to its new pricing terms, Apple has also imposed two direct requirements on the business model of alternative app stores for which we are at a loss to find a justification. Specifically, an alternative app store must:

- Agree to build an app whose primary purpose is discovery and distribution of apps, including apps from other developers.
- Agree to provide and publish terms, including those pertaining to content and business model, for apps you will distribute, and accept apps that meet those terms.

2 S. C. Salop and D. T. Scheffman (1983), “Raising Rivals’ Costs”, *The American Economic Review* 73(2): 267–71

The underlining here is our own. These terms are highly constraining. The first requirement prevents the development of proprietary app stores that sell a single developer's apps. The second prevents the development of carefully curated app stores (unless they can formalise all of their curation decisions within published criteria). Both of these categories of app store would seem to be useful innovations that end users would likely value. We see no reason why they should be arbitrarily forbidden, nor do we understand why it is legitimate for Apple to impose business models on alternative app stores.

Implications for the DMA

Apple's communications stress the fact that the new terms will be favourable to the vast majority of app developers. This is because the vast majority of developers are small and pay no fees under either set of rules. The problem with the proposed Apple rules, as we have shown, is that they will block entry and innovation in app stores rather than increasing contestability as the law requires.

For popular apps that pay nothing to Apple today, the exclusionary mechanism is straightforward: the fee structure creates a significant new financial cost if those developers choose to distribute through third-party app stores. Without popular apps in their stores, rival app stores cannot attract users, grow, and provide contestability. The Apple scheme kills the network effects of rival stores. By deterring successful entry of third-party app stores, Apple protects its monopoly position in app stores on the iPhone, the resulting monopoly profits, and the control over the path of innovation.

The DMA is a regulation with the specific objectives of contestability and fairness. In the context of app stores, it is clear that both objectives require that third-party app stores can enter and be effective competitors on devices. The tariff announced by Apple in fact achieves the exact opposite of the DMA objectives by making entry of rival stores commercially unviable due to their inability to attract popular apps.

The adoption of this contract by a monopoly distributor at the moment it is faced with entry from rivals looks like anticompetitive conduct. Moreover, behaviour that risks blocking the objectives of the DMA poses a threat to the legitimacy of European law. The text of the DMA is clear: it is up to Apple to show that its proposal will increase fairness and contestability or else abandon the exclusionary elements of the scheme. Commission enforcers must ask the company to do so. If they do not, we fear that the DMA enforcement process is at risk.

The Annex, “Highlights of the Current Rules,” along with tools for calculating potential fees can be found in the original publication at <https://cepr.org/voxeu/columns/apples-exclusionary-app-store-scheme-existential-moment-digital-markets-act>.

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Chapter 6.

Access Pricing for App Stores under the Digital Markets Act

June 2024*

Executive Summary

This article concerns itself with fees that Apple and Google might charge to business users in their respective mobile ecosystems. We lay out the economic analysis behind the goals of the DMA—contestability and fairness—as they apply to third-party app store access fees. We focus on the access fees for alternatives to the Apple App Store, as this has become contentious in the early enforcement of the DMA. Much of our analysis, however, also applies also to Google and/or any other designated gatekeeper.

This paper makes several foundational points. First, the DMA permits Apple to charge a fixed fee to review the security of third-party app stores or apps distributed through and operated on Apple’s operating system (‘Review Fee’). The level of such a fee should be related to the cost of the review function for the reasons we describe below. Generally, because the cost of conducting a review is independent of the revenue an app generates, so too should be the Review Fee collected to cover that cost.

Second, there are many fees that apply to different elements of the Apple ecosystem (e.g., the cost of a handset, advertising in the app

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store, etc.) that are unaffected by the DMA. However, we show that one element of this complex fee structure—the fees Apple places on third-party app stores for the right to reside on iOS (‘Access Fee’)—is constrained to zero under the DMA. We explain why setting this one fee to zero is required for compliance with the DMA and why this restriction is proportionate. In brief, because third-party app stores are potential competitors to Apple’s ecosystem, non-zero Access Fees would block contestability, making them very harmful. Meanwhile, any financial harm to the gatekeeper that might result from setting this fee at zero is limited because of the freedom the gatekeeper has to monetise its ecosystem in other ways that are compliant with European law, including by selling devices, advertising, and other services.

Third, fees imposed on one category of business users may have implications in respect of fairness and contestability for a wholly separate category of business users. The regulator must remain alert for these ‘adjacent’ anticompetitive effects. Of particular relevance here, a fee Apple imposes on app developers only if those developers distribute through a rival app store imposes a direct cost on those developers to be sure, but it also undermines fairness and contestability in the app store market. By punishing app developers for using an alternative distribution channel, the fee suppresses app developers’ use of those new channels, depriving the new channels both of revenue from the app developers (which is unfair) and the benefits that would accrue from network effects that would make them more attractive to end users (which also undermines contestability).

On 25 March 2024, the Commission opened an investigation against Apple in regard to its compliance with 5(4), the requirement to allow effective use of third-party app stores.¹ Our final point is that if the Commission finds non-compliance under Article 29, it can proceed to specify what Apple should do by using the procedure in Article 8(2). In particular, we recommend that the Commission use Article 8(2) to specify an Access Fee of zero to rival distribution channels, including third-party app stores, allow a positive Review Fee, and combine these with unconstrained pricing for other elements of the ecosystem such as advertising and the price of the handset (consistent with the law).

1 Press Release, ‘Commission opens non-compliance investigations against Alphabet, Apple and Meta under the Digital Markets Act,’ IP/24/1689 (25 March 2024), https://ec.europa.eu/commission/presscorner/detail/en/ip_24_1689.

Opening the app store market without delay is necessary in order to obtain the innovation and entry by business users that is the purpose of the DMA. This solution is simple and proportionate and can be supported with the materials and evidence gathered thus far.

It is theoretically possible that our proposal is the unique compliant fee structure; in other words, it is possible that there are no fees Apple could impose on third-party app stores that are unrelated to its market power and therefore are not Access Fees. Any other lawful fee charged by Apple would need to advance contestability and fairness; fees for advertising or reviewing apps may fall in this category. It is beyond the scope of the current paper to prove our recommendation is the only possible solution.

We demonstrate how to use economic principles to inform the Commission's determination of whether a gatekeeper's fee structures, applicable to the app and app store ecosystems, comply with the DMA's requirements. Based on analogs to the telecommunications industry, the policy community may believe a compliant Access Fee should be based on the well-known efficient component pricing rule. We explain why this is unlikely to be a helpful pathway in the case of digital platforms, and that economic analysis supports a zero Access Fee in the case of third-party app stores.

I. The Regulatory Framework

A. Innovation

Before we begin our analysis, we provide some context. First, we acknowledge that the digital gatekeepers regulated by the DMA have been, and continue to be, innovative firms. The digital revolution of the last thirty years has created enormous benefits in enabling faster, better, and cheaper communications, and in allowing the distribution of cultural content, automation, improvement in productivity, etc. The gatekeepers regulated under the DMA have often contributed positively to these changes. At the same time, they create novel societal challenges as we learn how to use these new tools. We hope and anticipate that society will learn to use them more wisely as time goes by. Indeed, the process of initiating and experimenting with regulation and improving it over time is part of that evolution.

Second, an economy and its citizens benefit when law-abiding firms or individuals that develop new technologies benefit financially from their innovative effort. This is important both as a matter of fairness and as a matter of economic incentives. The alignment of private incentives and public interest is critical in designing such policies and regulation can play an important role in furthering this objective. This idea is not new and is not limited to the digital economy. At the same time, law and regulation have often put limits on the proportion of the social benefits generated by their innovation that is allocated to inventors: patents and copyrights are limited in length and in the scope of the protection that they afford; regulation and competition law limit the strategies and prices chosen by even the most innovative firms. Doing so helps to keep these markets fair and contestable, which allows entry of the next generation of innovative firms to reap rewards in their turn.

In the context of the digital gatekeepers, the rewards for innovation do not result solely or even mainly from innovations that IP protections reward. Rather, the underlying technology, network effects, and the role of data create a very strong ‘first mover advantage.’ By giving the winner all the rents even when rivals are close behind, the platform economy overly rewards the first mover. The distribution of rents does not match the contribution of value when the benefits stemming from the platform are not caused solely by the activity of its owner, but also by (a) the coordination of the users around that platform and (b) the activities of these users.² This raises new issues that have, among other consequences, implications for the regulator’s enforcement of rules regarding appropriate Access Fees.

There has been a long lag between the realisation that digital regulation was needed, the building of the necessary institutional capacity to regulate, and the start of the enforcement process. The enforcement efforts now underway were launched many years after the market power described above was established. Given how long it has had to wait, society properly expects quick action from the regulator and quick results from the DMA. The urgency is partly to show that the people should benefit from the laws they pass, and that this is one

2 This phenomenon is explained in more detail in a previous article by some of the authors: Jacques Crémer, Gregory S. Crawford, David Dinielli, Amelia Fletcher, Paul Heidhues, Monika Schnitzer, Fiona M. Scott Morton & Katja Seim, *Fairness and Contestability in the Digital Markets Act*, 40 *Yale J. Reg.* 923 (2023).

benefit of living in a democracy. The urgency is also partly due to the importance of freeing up innovation in digital technologies. The fast pace of those technologies creates a risk that slow-moving regulation becomes irrelevant. Regulation is needed quickly to protect existing business users from harm as well as to incentivise them and new entrants to create innovations that benefit society. Of course, policy makers need to be careful not to dampen the incentives for subsequent innovations by gatekeepers themselves or the incentives for new entrants on the market to dislodge the incumbents. We believe that our analysis puts forward a regulatory framework that affirmatively improves incentives for innovation.

B. Benefits from Competition in App Stores

The DMA's requirement that Apple and Google offer their users the choice of using alternative app stores reflects the importance of such stores for driving quality and innovation. In recent years, the number of apps users have been installing on their handsets has declined from a peak during the beginning of the pandemic in 2020.³ This is the case despite the increasing number of applications of all kinds that make a handset more useful. Among the reasons for this decline could be the low quality of the discovery process and the lack of innovation in distribution. All apps are distributed through one of two large monopoly stores⁴ that have limited functionality; finding an app involves searching through millions of apps using the store's search function; the resulting recommendations are themselves distorted by advertising; and the store is not tailored to the needs of particular apps or users.

Innovation and store variety would improve the experiences of both consumers and business users. Rival app stores could provide value in curation and search by carrying only a subset of apps and offering users a different value proposition. Rival stores could be run by a large corporation with a particular business model, such as Disney in curation of apps for children, Pinterest in curation of apps for creativity, or American Express in distribution of apps for frequent travelers. New models of stores could spring up, such as a store that would offer a

3 See Louise Wylie, 'US App Market Statistics (2024).' *Business of Apps* (24 Feb. 2024), <https://www.businessofapps.com/data/us-app-market/>.

4 Apple's App Store is a monopoly and Google's Play Store a quasi-monopoly on the ecosystem they serve.

discount for subscription to multiple online newspapers, or a store run by a government with helpful apps for its citizens. Rival stores could also compete simply by charging lower fees to developers. Those lower fees would raise the returns to developers, encouraging more to enter and invest, and thereby increasing variety and choice for end users.

Users might want to make a non-legacy store their default while multihoming across others, or they might want to single-home on a rival store that offers higher security or a lower carbon footprint. Parents may wish to give their children access to only a child-centred store, for instance. All these options represent innovation, which is an important objective of the DMA, and one that the European Parliament feared was being harmed by incumbent gatekeepers. Effective access to third-party stores will increase contestability on the platform (we previously have called this competition *in the market*⁵) with resulting improvements in price, quality, and innovation for both sides of the platform. The second reason that competition in app stores is crucial is because such stores represent potential future competition for Apple's operating system (we previously have called this competition *for the market*⁶).

As described in the DOJ's recent antitrust complaint against Apple, app stores are a type of 'super app,' which can function as middleware.⁷ Middleware lowers users' switching costs across operating systems because it functions on both the incumbent and rival operating systems. Users can adopt the rival OS, log in to the middleware, and immediately access entitlements, identities, and functionalities they expect. This promotes entry of rival operating systems because lower switching costs makes obtaining customers much easier. Super-apps will be part of robust competition in app stores, and in this way increase contestability in operating systems. Effective access to third-party stores therefore will increase contestability for the platform itself, which will in turn benefit both business users and end users as they will have more distribution choices.

5 See Crémer *et al.*, *Fairness and Contestability in the Digital Markets Act*, *supra* note 2, at 994-95.

6 See *id.*

7 Compl., *U.S. v. Apple*, Case 1:23-cv-00108 (24 Jan. 2023) at para. 63, available at <https://www.justice.gov/opa/media/1344546/dl?inline>.

C. The Size of the App Store Business

App store fees are a significant portion of the business of the two gatekeepers. In 2023, Apple services generated \$89.3 billion dollars, or about a quarter of the revenue generated by the sales of hardware. Apple does not break out the components of its services revenue, perhaps because the category contains a very large payment from Google for the exclusive default position at all search access points on the iPhone. We know from the Google search antitrust trial in the United States that this payment is about US\$20B annually, or 24% of the Apple's service category revenue. Other services in the category include advertising in the App Store, the margin on top of the credit card fee that Apple charges for Apple Pay, subscriptions for storage, AppleCare, Apple Music, and the like. It nonetheless seems likely that the single largest source of revenue in the Services category, perhaps about half, is the percentage fee from digital sales in the Apple App Store. This revenue is about 12% of total 2023 Apple revenue.

Since 2021, Google's annual revenue from the Google Play store has been over \$40 billion. Google's annual revenues in recent years have grown from \$250 to over \$300 billion. Thus, app store revenues are approximately 15% of Google's revenue.

D. Two Types of App Store Fees

We define an 'Access Fee' to be a fee assessed by the gatekeeper and borne by an app store or alternative distribution channel for the right to reside on the gatekeeper's operating system. Our analysis also occasionally considers the distribution fees paid by developers for two reasons. First, when the gatekeeper's own store charges a high price to developers, developers will seek alternative distribution channels. If fees charged by the gatekeeper to third-party app stores are zero, developers may want to join together to open their own stores, as this could lower the cost of distribution. Second, the gatekeeper can design a fee that is formally paid by the developer but functions as a cost to the entering app store. For example, a fee that a developer pays on its sales through the Apple App Store only if that developer also distributes through a third-party app store blocks that store's ability to attract content. This design may cause a regulator to confuse the party who formally pays the fee (the developer) with the party whose access to the operating system is rendered ineffective by the fee (the third-party app store).

We define a ‘Review Fee’ as the fee that a business user pays to the gatekeeper or its agent to undertake a safety and security review of the app or app store software. This is a fixed fee per app or app store being reviewed and its level will be related to the cost of the review function. We keep this fee conceptually distinct from the Access Fee above.

There may be other fees charged by gatekeepers such as the prices of handsets, other hardware, and different types of advertising. These are not the focus of our analysis because the DMA does not (generally) constrain them.

F. DMA-Recognized Functions within the App and App Store Ecosystems

The DMA describes three key entities within the app and app store ecosystem.

Gatekeepers: Apple and Google each are designated gatekeepers that control both an operating system that has been designated a core platform service, or ‘CPS’ (iOS for Apple, Android for Google) and an app store that also has been designated a CPS (the App Store for Apple, and the Play Store for Google).

Business Users: the business users who might seek access to these CPS’s are the app developers, i.e., firms other than Apple and Google that develop and seek to distribute ‘software applications’ and/or ‘software application stores.’ A developer offering a new mobile game would want access to the App Store and Google Play (and any third-party app store) to facilitate end-user downloads of the new game app onto their devices. A business user might want to open and run a third-party app store for either the Apple or Google Android OS.

Intermediation Services: App stores constitute intermediation services that link the developer business users to end users. Definition 2(14) says, “‘software application stores’ means a type of online intermediation services, which is focused on software applications as the intermediated product or service.” App stores additionally qualify as business users under Definition 2(21), however, an app store uses ‘core

platform services for the purpose of or in the course of providing goods or services to end users.’ Thus, all apps are business users, but only those apps that operate as app stores also qualify as intermediation services.⁸

G. Legal Framework Governing Fees for App Stores

Several article 5 and 6 obligations, read collectively and in conjunction with certain of the DMA’s recitals and definitions, together provide a legal framework for analysing compliance of these fees and any others. Whether a particular fee is DMA compliant depends not just on its nature or size, but also on who is charging it to whom as a condition of access to which CPS. One of the points we make below is that very often the DMA rules generate results that coincide with the optimal pricing principles generated by economic analysis. The rules do a good job of creating appropriate incentives and maintaining efficiency while advancing the DMA’s twin goals of contestability and fairness. The overlap between the DMA rules and the outcomes generated by reasoning from principles is not always perfect, however. As we shall see, the DMA specifies certain limitations that are consistent with first principles but not necessarily commanded by or easily derived from them. For this reason, it is important to lay out the legal framework the DMA expressly erects. Our subsequent exploration of the related economic theory will illuminate the rationale of these rules and help inform the Commission’s enforcement of them in a way that is most likely to generate access fee structures that are DMA compliant, that advance the DMA’s twin goals of contestability and fairness, and that are economically optimal, meaning that they are efficient and maximise welfare. Here is this framework:

- DMA 6(4) provides that the gatekeepers must allow ‘effective use’ of apps and app stores on their operating systems. This obligation includes, expressly, a technical

⁸ DMA Definition 2(5) defines ‘intermediation services’ by reference to 2(2) of Reg. 2019/1150. We can imagine some line blurring between apps as business users and app stores as intermediation services. A game app might offer the ability to download other games without leaving the app, for example. Whether incidental, store-like features such as these are sufficient to push a traditional non-store business user over the line so that it also should be considered an intermediation service is beyond the scope of this paper. We point out the possibility merely to alert enforcers that the dividing line between the seemingly separate categories might be more porous than the DMA’s definitions suggest.

access component (the gatekeeper can't allow access that makes an app or app store run at half-speed, for example) and, by implication, a pricing component. Although DMA 6(4) does not mandate that access to the operating system is free of charge, the 'effective use' provision acts as a substantive fee cap: if any combination of fees relating to access to the OS prevent 'effective' use of the OS, they are noncompliant.

- In addition, DMA 6(4) provides that gatekeepers may, in respect of safety and security reviews of both apps and app stores, take 'measures' so long as they are 'strictly necessary and proportionate' and also 'duly justified' by the gatekeeper. Recital 50 clarifies that it is the gatekeeper's burden to show that "there are not less-restrictive means" than those it has chosen "to safeguard the integrity of the hardware or operating system." Further, it is implied that if a gatekeeper elects to undertake such measures, it may set a Review Fee for undertaking a safety and security review of an app or app store. This is a fee the DMA permits but substantively limits.
- Recital 40 (which elucidates the DMA 5(4) obligation to allow business users to communicate and transact with their end users through alternative distribution channels free of charge) makes it clear that gatekeepers may charge business users for facilitating the *initial* acquisition of end users. The text states, '[a]n acquired end user is an end user who has already entered into a commercial relationship with the business user and, where applicable, the gatekeeper has been directly or indirectly remunerated by the business user for facilitating the initial acquisition of the end user by the business user.' That is, the gatekeeper may charge a business user for substantively facilitating a new match between a business user and an end user. This is a conceptually distinct activity from simply being the gatekeeper, whose function is necessary for business users and end users to connect in any way, whether old matches or new. The DMA does not state that a

gatekeeper may continue to charge the business user beyond the new match, and indeed DMA 5(4) confirms that it cannot charge for any communication between a business user and its end users.

- There are certain access fees the DMA expressly prohibits. For example, DMA 6(7) requires the gatekeeper to provide business users access to the same functions of the handset (those that operate a handset’s speaker, for an obvious example, but also all other APIs that the designated Core Platform services of the gatekeeper uses) that it makes available to its own services, free of charge.
- The DMA also prohibits any indirect measure, which includes fees, that undermines the effectiveness of the access the DMA seeks to guarantee. Article 13(4) states, “The gatekeeper shall not engage in any behaviour that undermines effective compliance with the obligations of Articles 5, 6 and 7 regardless of whether that behaviour is of a contractual, commercial or technical nature, or of any other nature, or consists in the use of behavioural techniques or interface design.”⁹
- DMA 6(12) permits gatekeepers to impose conditions (including fees) on business users, i.e., apps, seeking distribution through the gatekeepers’ own app stores. Those conditions must be FRAND and the gatekeeper must publish them.

H. Apple’s Fees and Their Impact

Until the enactment of the DMA, Apple did not permit alternative distribution of apps on iOS at all. As of May 2024, Apple has implemented a variety of fees on app developers and rival app stores. We summarise these below and include details (including the cost of belonging to the Apple developer program) in the Appendix.

Fees imposed on rival app stores: A fixed fee of .50€ times the number of annual users (after the first one million).

9 DMA Recital 50 also covers this material.

Fees imposed directly on third-party apps distributed through the Apple App Store: The large developers pay either (a) 30% of revenue earned through in-app purchases, or (b) 17% of revenue plus a 3% payment processing fee plus a fixed fee of .50€ times the number of annual users (after the first one million).

Fees imposed on third-party apps if they stop exclusive use of iOS: If the developer uses any alternative distribution channel other than iOS for its app, including linking out to the web, it must move to option (b) above and thus pay .50€ per annual user regardless of the app store those users employ to get the app (meaning the sum of the users in the Apple App Store as well as in third party stores, less one million).

The first condition is an Access Fee charged to rival app stores because it is required for them to reside on iOS and it monetizes the existing network effects of the gatekeeper. With the third condition, Apple blocks the entry of rival app stores as well as sales through developer websites, thereby creating fees that work directly against contestability. Consider ‘free’ apps that are used by companies like banks, e-commerce, and offline business to connect to their customers, for example Santander, Amazon, and Deliveroo. Also relevant are apps supported by advertising such as Facebook, Instagram, and Sky News. Today these apps can pay zero in fees to reach their end users through iOS. However, if they choose to distribute through an alternative store they must move to the new terms of the Apple store, namely .50€ per user per year (less the first one million users). Critically, *this fee is calculated on all installs regardless of the app store in which the downloads occur.* That is, the app developer must now pay .50€ for Apple App Store users it previously served for free.

For example, if Deliveroo distributes its app through a rival store, the company will have to pay .50€ for every user (after the first million) that it serves through the Apple App Store as well as for every user downloading the app through the alternative gaming store. The same switch in terms is required if the developer updates its app to include a link out to the web.¹⁰ The Apple pricing scheme effectively means that

10 See Jaspreet Singh, “Spotify says Apple has rejected its app update with price

any app developer with millions of existing downloads will become liable for a very substantial annual fee to Apple the moment it decides to employ distribution options other than the Apple App Store.

An app developer is permitted under 5(4) of the DMA to tell its users about alternative distribution channels where they can find better or different offers and, with respect to those acquired users, Recital 40 clarifies that the gatekeeper cannot tax those communications or the resulting transactions with those users. Users might want to click on a link that takes them out of the app to a website where they can buy a subscription or a game for a lower price on the developer's own website compared with the price in the app. If the developer updates its app to contain these instructions and the ability to link outside, Apple requires the developer to move to the new terms. First, this means the developer must pay Apple the large annual charge of 50 Euro cents for all its users (less one million). The new terms require the developer to agree to pay Apple 17% of its sales initiated within two weeks through any click on the external link. Payment processing is widely viewed to cost about 3% of sales, meaning that if an app developer links out and pays Apple 17% of sales as a commission and 3% of sales in payment processing, its total commission is identical to what it would pay if it were to stay entirely inside the Apple App Store, which charges a 20% commission under the new terms.

By making alternative distribution channels as costly as remaining with the legacy app store and not attempting to link out, Apple's fee structure prevents disintermediation of the App Store. Overall, Apple's scheme has the effect of choking off demand for rival app stores as well as rendering direct distribution unprofitable for many developers. Together, these policies have triggered non-compliance proceedings by the Commission.¹¹

It is interesting to speculate that the difference between apps and app stores may become less clear going forward. For example, some apps may be designed to encourage the user to download other apps. A player of

information for EU users", Reuters (25 April 2024), available at <https://www.reuters.com/business/media-telecom/spotify-says-apple-has-rejected-its-app-update-with-price-information-eu-users-2024-04-25>.

11 See Jacques Crémer, Paul Heidhues, Monika Schnitzer, and Fiona Scott Morton, 'Apple's exclusionary app store scheme: An existential moment for the Digital Markets Act,' *CEPR.org* (6 March 2024), <https://cepr.org/voxeu/columns/apples-exclusionary-app-store-scheme-existential-moment-digital-markets-act>.

Game A might be informed by Game A that she or she might enjoy Game B. Game A would at the same time offer the user the opportunity to buy game B within the environment provided by Game A—without the need to navigate to an app store. For the purposes of this paper, however, we keep apps and app stores as two distinct categories.

We note additionally that if there were vigorous competition among app stores—in other words, if Apple’s app store competed fairly with multiple third-party app stores—there would likely be no policy concern regarding the fees in the App Store. In that situation, if the fees Apple charged in its own store were higher than justified by its quality, developers and end users would change to one of the many third-party app stores on iOS or link out to their own web distribution.¹² For this reason, the analysis below spends little time on Apple’s fees for its own distribution services. Future robust competition may provide helpful evidence on what constitutes FRAND app store terms and fees.¹³

II. Fair Pricing of Apps and App Stores

The goal of the DMA to advance fairness between gatekeepers and business users is satisfied with an Access Fee of zero for rival distribution channels.

A. Contribution to Network Effects

We begin with the first goal of the DMA, which is fairness. Any method of monetizing a core platform service such as an app store must be fair. Crémer *et al.* (2023) provided a definition of ‘fairness’ tightly focused on economic principles and incorporating contestability:

[T]he organisation of economic activity to the benefit of users in such ways that they reap the just rewards for their contributions to economic and social welfare and that business users are not restricted in their ability to compete.

12 Switching should become easier as a result of the DMA (Article 5(4)) and the Commission’s decision in Case AT.40437 – Apple: App Store Practices (music streaming) (4 March 2024), available at <https://competition-cases.ec.europa.eu/cases/AT.40437>. Both require that Apple remove anti-steering provisions from its terms and conditions. This will allow apps that users currently operate via the App Store to inform these end-users of cheaper options elsewhere.

13 DMA, Article 6(12).

The final version of the DMA, published after Crémer *et al.* (2023), contains a definition in Recital No. 33 (according to its opposite):

For the purpose of this Regulation, unfairness should relate to an imbalance between the rights and obligations of business users where the gatekeeper obtains a disproportionate advantage. Market participants, including business users of core platform services and alternative providers of services provided together with, or in support of, such core platform services, should have the ability to adequately capture the benefits resulting from their innovative or other efforts.

This definition, though it uses the terms on “rights and obligations” in the first sentence, is entirely consistent with economic principles in its second sentence. We deploy these concepts as follows. Any consideration of a ‘fair’ fee for app stores should recognise and reward the benefits that app developers bring to users of the handset. Without a large number of developers offering useful functionalities, the size of the iPhone market would be far smaller. Indeed, this was Steve Jobs’s conclusion back in 2008 when he opened up the App Store to third-party developers.¹⁴ App developers bring users to the handset. While business users attract consumers to the ecosystem and those consumers purchase handsets, the consumers in turn attract business users who develop more applications. The platform gains from the trade between the two sides and can monetise it because of the strong network effects that prevent either side from leaving the platform easily.

Crémer *et al.* run a thought experiment in which end users and business users can coordinate to move simultaneously to a rival platform (in this case, a rival app store). The loss to participants from leaving Apple, or any given gatekeeper, will be relatively small if the main reason

14 This is confirmed by some of the findings in the Commission’s Apple decision. Evidence shows that large developers typically bring their own audience to their iOS apps typing the name of the service provider they are looking for. For example, Match Group found that the majority of new users from the App Store organically searched for its apps (e.g., by typing ‘Tinder’) while Apple contributed only 6% of discovery. In such cases, curation by Apple has little or no effect in-app discovery. Apple itself acknowledges that in general ‘65–70% of searches are for specific apps rather than searches for general topics such as music or travel.’ Apple Decision, Case AT.40437, *supra* note 9 at para. 111, available at https://ec.europa.eu/competition/antitrust/cases½02419/AT_40437_10026012_3547_4.pdf.

they participate in the store is because of the presence of the other side. The rival could have a better or worse interface; either way, its impact is small relative to the value of the network effects. For this reason, any fair price the gatekeeper charges will be low because it will reflect *only* the gatekeeper's value added, not the value added by the group of end users and the group of business users.

Indeed, there are sound reasons one might reasonably conclude that the fair price Apple should charge a rival app store for the privilege of residing on iOS should be *negative*. This is because we can presume that new, exciting and innovative app stores will attract new developers and drive end user engagement, making the handset more valuable to both sides of the platform and therefore also to Apple (in ways Apple can freely monetise as described above). We have no direct evidence of this, but we can look by analogy at evidence from other handset manufacturers' efforts to attract developers to their platforms. Huawei, for example, was willing to spend \$1.5 million to attract developers to its platform after losing access to the Play Store.¹⁵

Similarly, Microsoft was reportedly willing to pay developers \$600,000 per app to be placed on the Windows phone.¹⁶ Because, as we have described, apps and app stores both increase the value of handsets, there is no reason to think that Apple should not fairly be expected to pay third-party app stores for their presence, just as Huawei and Microsoft were willing to pay apps for their presence.

Each mobile operating system gatekeeper initially began life with a business model that did not rely on selling business users access to its platform. Each earned revenue from end users. Apple sold a handset that comes with an operating system and other hardware, while Google sold advertising. For both gatekeepers, the network effects generated by developers were, and are, critical to making the business model work.

15 See Joe McDonald, 'Huawei races to replace Google apps for next smartphone,' *AP News* (2 Jan. 2020), <https://apnews.com/huawei-races-to-replace-google-apps-for-next-smartphone-7323f8303d398c762d1866d7ba26657e>.

16 See Preston Gralla, 'Microsoft Subsidizes Developers up to 600,000 per Windows Phone App,' *Computerworld.com* (6 April 2012), <https://www.computerworld.com/article/1492359/microsoft-subsidizes-developers-up-to-600-000-per-windows-phone-app.html>; Walter Frick, 'App Developers: Here's How to Get Paid Properly,' *MIT Technology Review* (4 Dec. 2012), <https://www.technologyreview.com/2012/12/04/181333/app-developers-heres-how-to-get-paid-properly/>; Jenna Wortham and Nick Winfield, 'To Fill out its App Store, Microsoft Wields its Checkbook,' *New York Times* (5 April 2012), <https://www.nytimes.com/2012/04/06/technology/to-fill-out-its-app-store-microsoft-wields-its-checkbook.html>.

Another issue with making an assumption about the sign of net value creation for any given developer is that many app developers such as Netflix or the Financial Times pre-dated the iPhone. The new app distribution channel allowed for more functionality and was efficient for these developers. However, many of their users had subscribed or became familiar with their services before the App Store was invented. Indeed, the arrival of these existing popular services on the handset increased its value to users and drove network effects that benefited Apple. For a gatekeeper to later justify any charge as a ‘customer acquisition fee’ is therefore illogical.

Even after an app store is entrenched, and is designated as a gatekeeper, the need to attract more interesting developers to increase the use and value of the device and its ecosystem means that gatekeepers do not generally find it in their interest to impose high fees on most developers.¹⁷ QR (‘quick read’) codes offer a prime example of this positive feedback loop. First developed in 1993, QR codes did not immediately gain traction with device users. Indeed, clunky and ill-conceived early uses—plastering a QR code on the side of long-haul truck or on a billboard beside the interstate highway—made QR codes the

17 Apple itself points to the supposedly low fees it charges developers as a key economic driver of its thriving app ecosystem. The subtitle of a 2023 press release proclaiming that the Apple ecosystem generated a total of \$1.1 trillion in billings and sales in the prior year practically brags that ‘More than 90 percent of billings and sales accrued solely to developers without any commission paid to Apple.’ See Press Release, ‘App Store Developers Generated \$1.1 Trillion in Total Billings and Sales in the App Store Ecosystem,’ *Apple.com* (31 May 2023), www.apple.com/jo/newsroom/2023/05/app-store-developers-generated-one-point-one-trillion-in-total-billings-and-sales-in-the-app-store-ecosystem-in-2022/. More recently, Apple reportedly has asserted that 85% of apps pay no commission. Google Play’s website asserts that a whopping 97% of apps pay nothing for distribution on Google Play. See, e.g., Jason Knowles & Ann Pistone, ‘Hidden fees could mean you’re paying 15-30 percent more for your apps,’ *ABC7Chicago.com* (9 Feb. 2024), <https://abc7chicago.com/apple-app-store-google-play-apps-hidden-fees/14404977/>. Plainly, these companies perceive significant value in the distribution of apps that draw end users to their device, which raises the question why Apple insists on charging a large commission specifically to those business users that pose the most significant competitive threat. Consider also that Google charges a one-time fee of \$25 for all developers (see <https://support.google.com/googleplay/android-developer/answer/6112435?hl=en#zippy=%2Cstep-pay-registration-fee>); the Apple Developer Program has remained at \$99/year (see <https://developer.apple.com/programs/whats-included/>). These fees are for the base level software development kit. Though there are some additional tiers that cost more, and though some developers contend that all software development kits should be free, these membership costs have stayed relatively modest. Further, using mac iOS to develop an app prior to any attempted distribution is free. See <https://developer.apple.com/support/compare-memberships/>.

frequent butt of jokes among marketers and advertisers. The principal explanation for QR codes' initial 'failure to launch' is that they required specialised readers. This made the codes useful to consumers only in a narrow set of applications (e.g., when scanning an airline boarding pass at a gate with an embedded QR code reader) but useless in most other settings.

This all changed in 2017 when, in connection with the iOS 11 update, Apple incorporated a QR code reader in its native camera app. Millions of users suddenly and for the first time were carrying QR readers in their pockets. A developer who could find a cool use for the new technology would give users a reason to upgrade their handset and spend more time on it watching advertising. This spurred advertisers, marketers, and developers to experiment with countless new, consumer-friendly uses for the QR code, for example embedding the links in product labels to give easy access to useful and engaging information.¹⁸

The explosion of exciting new QR code placements encouraged users to update to iOS 11 more quickly than they might have otherwise. It also provided users even more frequent reasons/excuses to pull out their phones, making the users more excited about the products whose QR codes they scanned and more available for ad delivery from other advertisers as well. All sides of the platform reaped the benefits of Apple's inclusion of the QR reader. And, of special significance to this paper, so too did Apple, even though Apple charged no access fee whatsoever (to developers, to marketers, or to users) upon embedding the QR code reader in its camera app.

Apple's price of zero for developer access to such APIs may reflect the economic value that developers contribute to the gatekeeper's business, in particular the network effects needed for a successful OS or app store. By offering access to APIs at no charge, gatekeepers help induce developers to take commercial risks, which they hope will yield exciting apps that draw users to the operating system and create lucrative network effects for the gatekeeper.

18 See Bennet Travers, 'Did Apple Just Resurrect QR Codes?' *nebo*, Back to the Blog (Nov. 29, 2017), <https://www.neboagency.com/blog/apple-resurrect-qr-codes/> ('Maybe you want to know more details about a rug you see in a store labeled Fair Trade Certified. You can open your camera app, hold it over the product tag, and instantly see a video of the rug's origin story and journey to existence. Or say you're at dinner drinking wine you really love and want to know about the vineyard, vintage and good food pairings — just scan the QR code on the bottle.').

B. A Fair Access Fee

In principle one could try to separate out the value of superior technology from the network effects and explore a way for the gatekeeper to charge for the former. However, the superior technology is due, at least in part, to the fact that the gatekeeper's platform has enjoyed superior learning by doing over the years as well as to the benefits that it derives from the data it has acquired thanks to network effects. Thus, network effects will always be the source of at least some of the gatekeeper's advantage and these may not be monetized in an Access Fee. The difficulty of proving the value of superior technology—entirely separated from the market power of network—is one that the gatekeeper must surmount if it wants to justify a fee based on some technological offering.

In aggregate, apps have brought, and still bring, as much benefit to the gatekeeper as the gatekeeper does to the developers.¹⁹ It is therefore unfair for Apple to then trap the business users on the platform—which is an element of the ecosystem they co-created—with a monopoly app store and high costs of distribution. Business users have no choice but to accept the Apple commission and Core Technology Fee (“CTF”) because of its entrenched market power derived from these network effects. By contrast, the availability of rival app stores and links to web sites gives developers a choice about how to distribute. Accessing those alternative distribution channels lets apps keep a greater share of the surplus they generate. Fairness therefore requires that there are no barriers put in place to the effective functioning of rival app stores. Fees levied by the gatekeeper on developers wanting to use those stores or link to the web to carry out their own sales are likewise unfair. In addition to access restrictions and fees being forbidden, some other kinds of fees or technical limitations on distribution for business users could be unfair because they are an inaccurate reflection of these users' contribution to the platform. The gatekeeper remains responsible for showing fairness and contestability of these other fees.

19 This observation has led one commentator to conclude: 'The pie should be divided so that the gatekeeper is remunerated in proportion to the net incremental value of the gatekeeper's platform relative to its next best alternative. This means that it is able to appropriate the full value of its superior technology but not the value associated with the network effects that characterise the core platform services regulated by the DMA. The practical implementation of this surplus-sharing rule is difficult but not impossible.' Jorge Padilla, *Fairness and Contestability in the Provision of Software Application Stores Services*, *Journal of Antitrust Enforcement* (2024) 1, 5.

One of the original justifications offered by Apple for its developer commission was as a ‘finders’ fee’ for delivering their wealthy and tech-savvy consumers to business users.²⁰ This sounds like a version of a fee permitted by the DMA, an ‘initial customer acquisition’ fee. However, a monopoly gatekeeper benefitting from powerful network effects is not ‘finding’ many people today because (virtually) all end users single home on a gatekeeper platform already. For example, if such a user has searched the app store for ‘Spotify,’ it is more likely that the Spotify created that demand than that Apple specifically invested to bring a group of music enthusiasts to Spotify. Instead, as described above, it may be the arrival of the Spotify app that attracts the music enthusiasts to the ecosystem in the first place or deepens their engagement with it.²¹ Therefore, to the extent Apple justifies an Access Fee such as the CTF as the ‘initial customer acquisition fee’ the DMA contemplates, this likewise fails a fairness test.²² Moreover, an ‘initial’ fee is clearly time limited and does not attach to the customer’s relationship with the app store or app ad infinitum. For example, an ‘initial customer acquisition fee’ that took the form of advertising within the App Store could be perfectly fair as it performs a match within the ecosystem that is time limited. Ordinary non-deceptive advertising by app stores may be compliant with the DMA for this reason.

20 The Commission’s 2024 decision recounts Steve Jobs’s own explanation of this justification, quoting Jobs in 2011 as stating: ‘[O]ur philosophy is simple—when Apple brings a new subscriber to the app, Apple earns a 30% share; when the publisher brings an existing or new subscriber to the app, the publisher keeps 100% and Apple earns nothing.’ Apple Decision, Case AT.40437, *supra* note 9 at para. 111, available at https://ec.europa.eu/competition/antitrust/cases%202419/AT_40437_10026012_3547_4.pdf.

21 It may be that very few end users adopted the iPhone specifically to access Spotify, but it is easy to imagine ways in Spotify’s presence (or the presence of any number of other apps) could lead end users to engage with their devices more frequently and for longer stints. A gym goer who might usually leave her device in her locker might, after downloading Spotify, keep her device with her so she can listen to music while on the treadmill. Increased engagement of this sort contributes value to the ecosystem and to all of its participants.

22 Our point is not that the DMA makes any fee based on the ‘finder’s fee’ theory unfair or noncompliant. To the contrary, the DMA contemplates that the Gatekeeper may charge ‘for facilitating the initial acquisition of the end user by the business user.’ See DMA Recital 40. But, once the end users are acquired, the DMA makes clear that business users (apps or app stores) should be free to communicate and conclude transactions with their end users through whatever channel they choose, without paying additional ‘finder’s fees.’ This is to ‘prevent further reinforcing their dependence on the core platform services of gatekeepers, and in order to promote multi-homing.’

A Review Fee, as described above, is fair if it is appropriately related to the cost of the necessary review activity. If a gatekeeper, for example, needs to do a security check that ensures the app works as promised and collects the data as explained, the costs for doing so are also social costs. For incentive reasons also, these costs should be borne by the business user. App or app store review costs, however, are likely to be largely independent of how many people use the store; independent of whether an app or app store shows advertising to users; whether it has an upfront purchase price, or earns money from in-app purchases. If the cost is independent of the revenue an app generates then so should be the fee collected to cover it. A compliant Review Fee will efficiently allocate the costs of carrying out the review and we expect this fee to be both fixed and positive.²³

III. Contestability and the Pricing of Apps and App Stores

The goal of the DMA to advance the contestability of gatekeeper markets is also satisfied with an Access Fee of zero for rival distribution channels.

A. Positive Access Fees Undermine Contestability

The second goal of the DMA after fairness is contestability, which is defined as follows in Recital 32: “For the purpose of this Regulation, contestability should relate to the ability of undertakings to effectively overcome barriers to entry and expansion and challenge the gatekeeper on the merits of their products and services.” This means that gatekeepers cannot unduly use their gatekeeping power to monopolise or otherwise tilt the playing field in their favour when competing in other services such as those apps or apps stores provide. An app store, and sometimes an app itself, competes either with the monopolist itself (e.g., the Apple App Store, Apple music) or with another app that is favoured by the gatekeeper (e.g., one that pays the gatekeeper as Google does for search access points). Contestability requires that the rival app store be able to get onto the handset and offer apps at similar terms to the gatekeeper’s store. Since the gatekeeper’s store pays no fees to the gatekeeper, this creates a benchmark of zero fees for the rival

23 One may be tempted to argue that charging a percentage of revenue allows risk-sharing between the business user offering the app and the gatekeeper. But given that the fee for such security checks is likely to be very modest and in line with what firms have to pay now to be enrolled in Apple’s developer program, such risk-sharing incentives are unimportant in practice.

store. Technical barriers or contractual ones would likewise constitute other straightforward hurdles that the law prohibits. If an entrepreneur wishes to launch a rival third-party store to contest Apple's monopoly distribution channel, it must have the same costs and functionalities as Apple or the market will not be contestable. For Apple to then charge an Access Fee on third-party app stores is a priori inimical to the DMA.

Consider the alternatives that developers have when considering use of rival app stores. A rival store must offer improvement over its customers' other options, namely the gatekeeper's store and a developer's cost of disintermediating and making the sale through its own website. If gatekeepers allow linking out to function freely, the developer will consider its cost of setting up and running its website. It will compare that to the fees charged by all the stores on the platform. If a gatekeeper can charge access fees to an entering app store, that store would have to pay the costs of its own operations as well as the gatekeeper's fee. If the rival store attempts to add the gatekeeper fees onto what it charges app developers, those app developers could be driven to use the gatekeeper's own app store (if its prices are lower) or disintermediate stores entirely and link out to the open web where they would pay only the cost of operation.

This outside option of disintermediation is a significant constraint on the prices a third-party store can charge, as well as on the prices the gatekeepers' stores can charge. Recognising the power of disintermediation explains why both Apple and Google have chosen to impose the same fees for sales on the web as they do in their own stores. When fees to sell on the web are eliminated but the gatekeeper charges rival stores an Access Fee, such stores will have a much harder time competing with web sales. Likewise, eliminating Access Fees will allow rival app stores to be competitive with external channels as well as the gatekeeper's own store.

Contestability in apps, app stores, and mobile operating systems will increase for three distinct reasons when there is a right of access without charge. First, businesses will have increased incentives to enter due to the prospect of connecting with the many end users on the other side of the interface. Second, a regulated interface gives business users not just the right to access to that interface, but certainty about that right going forward, again increasing the incentive to invest. The right of access has a final competitive implication: the DMA protects a business that

innovates in a way that creates a potential future competitive threat to the gatekeeper. This is likely to be the case for app stores, particularly those that become middleware and threaten the market power of Apple. Thus, in the long run, the right of access can create contestability for the platform itself.

To the extent that third party apps delivered through third-party app stores can evolve into competitors for platform services of various kinds in the future, gatekeepers have incentives to foreclose that channel of distribution. Importantly, when a rival store has the right to access a gatekeeper's interface for no Access Fee, neither the store nor the app itself is controlled by the gatekeeper (other than through the security review process). Either can develop its technology in any direction it chooses and monetise that business model. A 'super-app' could enter this way and become the core of a new platform that competes in some way with incumbent platforms, benefitting consumers. The possibility of increased contestability in the future may be why the gatekeeper does not allow rival app stores today. The DMA allows more creative directions for innovation and technology to have a chance of facing a market test with users, rather than being shut down by the incumbent gatekeeper. This discussion makes it clear why a positive Access Fee harms contestability in many markets; monetizing the market power that comes from network effects restricts the entry of potential competitors in mobile operating systems as well as app stores.

B. Specifying a Compliant Fee Structure

Many regulations contain specific technical provisions established by the regulator that the regulated firms must follow. The DMA does not take this approach. Rather, under the DMA it is the gatekeeper's responsibility to find a way to meet the mandates and prohibitions of the law with regard to its app store fees.

At the outset of the specification process, it is the gatekeeper's obligation first to propose measures that it deems compliant with the DMA and provide a reasoned submission as to why it thinks the measures are compliant.²⁴ Thus, the Commission does not start with a blank slate. This assignment of responsibility takes advantage of the superior knowledge of the corporation about its own complex technology, its ecosystem, and its business strategy, particularly relative

24 DMA, Art. 8(3).

to the knowledge of regulators in Brussels on those subjects. If a gatekeeper proposes fee structures that are exclusionary, the regulator will determine they are non-compliant and collect comments from interested third parties. It may explain the measures the gatekeeper should take to fix the problem.²⁵

At the time of writing, the Commission has opened an investigation into noncompliance of the Apple App Store under Article 20 in conjunction with Articles 13 and 29 for breach of Article 5(4).²⁶ For the reasons set out above, we agree that the current Apple proposal is not complying with the DMA. Both the level of the Core Technology Fee and its structure as well as the commission on web sales harm the free choice of distribution by developers.

Given this conclusion, what is the next step for the Commission? Article 8(2) of the DMA allows the Commission to further specify what the gatekeeper must do to comply with the law. If it chooses to do so, the Commission would set a third-party app store Access Fee and give guidance on acceptable Review Fees. The compliant and proportionate scheme is a positive cost-based Review Fee, a zero Access Fee, and whatever the gatekeeper chooses to do with the rest of its ecosystem that does not circumvent the DMA. The first two elements should be specified by the Commission, while the gatekeeper can determine its own handset price, accessory prices, advertising prices, and the like. There may be other ways to comply with Article 6(4), but it is up to Apple to propose them and to demonstrate that they do comply.

In our view, it would be very costly to business users and end users if the Commission used the DMA process to permit a noncompliant fee to remain in place for years while the regulatory process winds through the courts. Such a situation harms contestability and fairness, the goals of the law, while creating uncertainty about whether the law will ever be enforced in a useful way. For the reasons set out above, Apple cannot set up barriers to its own potential competitors, nor can it appropriate surplus of others, both of which occur due to the existing fees. We stress that our proposal does not preclude Apple from deriving

25 DMA, Art. 8(6).

26 DMA, Art. 5(4) ('The gatekeeper shall allow business users, free of charge, to communicate and promote offers, including under different conditions, to end users acquired via its core platform service or through other channels, and to conclude contracts with those end users, regardless of whether, for that purpose, they use the core platform services of the gatekeeper.').

monetary benefits from the presence of other app stores, as it can do this through an increase in the price of the device. It might argue, as it has, that the presence of these competing app stores decreases the value of the platform by making it less safe. Even if this were the case, which we do not believe to be true, it must still obey the DMA and can only charge positive access charges if it can show that this can be done while preserving fairness and contestability.

C. Tradeoffs

It is interesting to speculate on whether it is possible to set up the social planner's problem and solve for optimal prices for all the elements of a mobile ecosystem while excluding the impact of market power on app store fees and including the complementarities between elements of the ecosystem. If this problem could be solved, in principle a gatekeeper could use it as a method to prove the fairness and contestability of the resulting fees. To our knowledge, this problem is too difficult for existing economic methods. In addition, there is the empirical challenge that costs, demand, and technology evolve, so the policy target would be constantly moving.

Without this full model, one cannot use standard economic methods to determine if there is a tradeoff, or economic cost, to specifying an Access Fee of zero as the law requires. However, even without these tools, there are several reasons to conclude that there is very likely little to no welfare loss from this element of the law. First, third-party app stores are direct competitors (though still 'potential competitors' since they have not yet entered) to the gatekeeper app stores. Ordinary competition harm to consumers in a monopoly app store market is likely to outweigh indirect benefits (undertaken in the least anticompetitive way) to the consumers in those stores.

Second, the innovation that is likely to flow from competition in app stores is significant. We can see from the opening up of consumers' television sets to Netflix, Disney, Roku, Hulu, and many others just how much consumers value choice. The new environment in app stores is likely to drastically increase consumer surplus and business user profit. For example, stores that are already poised to enter include Epic, Microsoft, and the startup AltStore.²⁷ Meanwhile, the many other

27 See Jacob Kasternakes, 'Epic intends to launch its game store — and Fortnite — on iOS,' *The Verge.com* (25 Jan. 2024), <https://www.theverge.com/2024/1/25/24050800/>

instruments that gatekeepers have to charge for other aspects of their ecosystems allow them to balance demand and create incentives to maximize profit. It is important to be clear that these other policies and prices may not be used to circumvent the DMA. However, Apple can increase the price of its handset or advertising in the app store, for example. Google likewise has prices and services unconstrained by the DMA that it can use to balance demand and extract rents.

Third, the existing app store policies were not chosen to be optimal. There is abundant evidence that gatekeepers have little to no analytical justification for their access fees. For example, in setting a 30% commission fee on in-app purchases, the costs of running the App Store were not considered; rather, the percentage came from the cost of credit card processing on a \$.99 song sale.²⁸ According to the Commission, furthermore, “[t]he economics of and the impact on the downstream markets were not taken into account when setting the level of the fee.”²⁹ This was confirmed by Apple’s external economic adviser:

The point is that the totality of the investments, and not just in the App Store, but in fact in the entire ecosystem, are monetised through a complex set of tools [...] or channels: the App Store commission, services, most importantly the price of the device that is the main means through which investments are recovered, and advertising. So you have a set of channels through which you recover investments. The point I am trying to make is that that 30% commission is not even what is required to map exactly into the investment into the App Store. It’s one of the channels through which monetization occurs for the entire ecosystem.³⁰

epic-games-store-fortnite-apple-ios-launch-eu-dma.

28 “There was some precedent for how Apple arrived at 30%. Apple had been charging roughly the same commission on music sales on its iTunes software. For each 99 cent song it sold, Apple passed on 72 cents to major music labels and 62 cents to independent labels ...” Jack Nicas, *How Apple’s 30% App Store Cut Became a Boon and a Headache*, *New York Times* (14 Aug. 2020), available at <https://www.nytimes.com/2020/08/14/technology/apple-app-store-epic-games-fortnite.html> (citing Nick Wingfield & Ethan Smith, *Music’s New Gatekeeper*, *Wall Street Journal* (9 March 2007), available at <https://www.wsj.com/articles/SB117340340327331757>.)

29 Apple decision, *supra* note 9, at para. 126.

30 *Id.* at para. 806.

The monetization objectively falls on a category of developers and there is vast cross-subsidisation to a huge tail of developers who pay zero, so benefit, get a sweet-heart deal, from this business model. The point is, someone needs to pay, and at the moment, there is a bunch of people who pay, but if you change that bunch of people, someone else needs to pay.

The same adviser further noted that

by definition, what I am saying is that in a world in which somebody pays and somebody doesn't, those who don't pay are being cross-subsidised. It's an objective observation. The point of how much of this is effectively going to be the component, I don't know, no-one does those calculations.³¹

Apple and Google have both shown their willingness to lower fees for app developers in response to public pressure—and to do so simultaneously and in round numbers. These are not characteristics of solutions to difficult engineering problems that vary by platform. For example, in 2021, in response to the pandemic, Apple lowered its fees on small developers and for subscriptions. Google implemented identical fee changes directly after Apple announced its move.³²

IV. Lessons from ECPR

We now evaluate the utility of the Efficient Component Pricing Rule (ECPR) in determining whether there is a DMA-compliant role for access fees. We note that it is critical *not* to carry over old practices and intuitions from regulated telecommunications or other non-digital industries for which ECPR was developed.

A. ECPR Oversimplifies the Complexities of App Store Ecosystems

We note as an initial matter that, although ECPR may at one time have enjoyed popularity among economists as a topic for theoretical debate, it found little purchase in the real world, with regulators of legacy

³¹ *Id.*

³² See Lauren Feiner, 'Google slashes service fees in its app store after similar move by Apple,' *CNBC.com*, 21 Oct. 2021, <https://www.cnbc.com/2021/10/21/google-slashes-service-fees-in-app-store-after-similar-move-by-apple.html>.

industries mostly ignoring or rejecting it as a basis for price regulation.³³ Digital gatekeepers are different than non-digital legacy monopolists in important ways that make ECPR even less likely to offer regulators simple solutions to difficult pricing problems than it offered in those other settings. The technologies themselves have different characteristics from past networks as do the gatekeeper business models, so the analytical path used to regulate them will also be different. In particular, the setting of ECPR is that of competition in a downstream market between a provider of the basic infrastructure used by itself and rival downstream firms. Moreover, the products sold in the downstream market are very similar across firms. This is quite different from the competition among digital platforms and complex ecosystems in today's digital markets. If ECPR proved overly simplistic for practical application in non-digital legacy industries, there is no basis to presume its straightforward application somehow will generate useful results in two-sided digital markets, the more complex dynamics of which are even less understood.

An important recent paper, Bisceglia and Tirole (2023) (hereafter BT), has rekindled an interest for an adaptation of the ECPR model to the economics of apps and app stores.³⁴ We have already briefly alluded to this earlier, but in this section we would like to expose in greater detail what we can learn and what we cannot learn from this adaptation.

ECPR was developed in the 1970s and 1980s as the deregulation of the large utilities led to a new problem. For instance, a monopolist provider of the local telephone services might compete on the provision of long-distance calls with other long-distance operators who must use the monopolist's local services to access end consumers. Regulators wondered what 'access fee' the local monopolists should be allowed to charge. As Baumol and Willig put it, 'When several firms compete with one another in the sale of an identical final product, where one

33 In a 2006 decision, for example, the UK Competition Appeal Tribunal rejected the use of ECPR as a helpful tool for resolving a dispute regarding water transport rates to be charged by a vertically integrated common carrier water system. The tribunal noted that 'ECPR is in fact a controversial methodology, both in the academic literature and in regulatory practice,' noting that it 'had not been presented with any examples of case studies of ECPR being successfully used.' See *Albion Water Ltd. v. Water Services Regulation Authority* (6 October 2006), paragraph 738, at 218, available at <https://www.catribunal.org.uk/sites/cat/files/Judge1046Albion061006.pdf>.

34 Michele Bisceglia and Jean Tirole, 'Fair Gatekeeping in Digital Ecosystems,' Toulouse School of Economics, Working Paper No. 1452 (June 2023), https://www.tse-fr.eu/sites/default/files/TSE/documents/doc/wp/2023/wp_tse_1452.pdf.

of the firms is the monopoly owner of an input that is indispensable in the supply of that product, the problem is how competition in the final product market can be preserved and not tilted to favor either the owner of the input or the owner's rivals.³⁵ A competitive market in the final product would also align incentives both for use of the service as well as ongoing investment and innovation, generating positive consequences for allocative efficiency, investment in the network, and social welfare.

ECPR, as developed by Baumol and Willig, is the solution that comes out of a simple competitive model and therefore provides an initial benchmark for an optimal access fee. The basic idea of ECPR is that the monopolist should 'charge' competitors the same price it charges itself for the essential input. But what is the price the monopolist charges itself for the input? It is the opportunity cost if that input is used by a competitor rather than the monopolist itself, namely the margin on the lost sale. The monopolist sells one less unit of final output and therefore has a lost profit margin when it offers capacity to the rival.

An example might help to build intuition for this idea. Assume the price of the final product is 10€ per unit, and that producing that unit costs 3€. The monopolist therefore earns a net 7€ of gross economic margin. Then, forfeiting the use of the intermediate product to accommodate a competitor has an opportunity cost of 7€ for the monopolist and this 7€ is the access price that the ECPR recommends. If the monopolist charged more, there would be circumstances in which competitors would not access the essential input despite the fact that they could use it more effectively than the monopolist. If the monopolist charged less, there would be cases where the competitors would request access despite the fact that they use the input less efficiently. We should stress that this presentation hides a number of difficulties, some of which we will discuss below. In particular, whether the 10€ of our example is a competitive price or a monopoly price is critical. The ECPR logic in this simple form does not work if the monopolist is charging a monopoly price.

One of the attractions of ECPR is its apparent simplicity. As Armstrong, Doyle and Vickers have pointed out, however, this simplicity

35 William J. Baumol, Janusz A. Ordover, and Robert D. Willig, 'Parity Pricing and Its Critics: A Necessary Condition for Efficiency in the Provision of Bottleneck Services to Competitors,' *Yale Journal. on Regulation*, 14:145-163 (1997). This article, written for a non-economic audience, provides a readable introduction and defense of ECPR.

'may be a misleading artefact of simple examples with extreme elasticities.'³⁶ In the rest of this section, we will discuss some of the assumptions underlying the simple ECPR rule and argue that, apart from providing an interesting intuition, it does not provide much guidance for app and app store pricing.

B. Monopoly Rents Must be Subtracted from Any Margin

As we have stated above, the final price used in the computation of the ECPR is not necessarily the price that is actually charged by the monopolist. Assume, as it would typically do, that the monopolist chooses an above-cost price, which includes a monopoly rent. Applied blindly, the ECPR would have the competitor compensate the monopolist for the loss of monopoly profits! This is explained by Baumol, Ordover and Willig: "We have consequently always maintained that efficiency requires both ECPR and some arrangement that prevents overpricing of both final product and bottleneck input and, consequently, that removes all monopoly profit from the opportunity cost component of [the ECPR formula]."³⁷ The correct use of the ECPR would therefore require that the price used in its computation is the price that would obtain if there were competition in the monopolist's market. Computing that price is an enormous task and is even more difficult in the case of the digital economy where there are few benchmarks of 'perfect' competition in two-sided platform markets.

This conclusion can also be understood using the logic of the DMA's goal of contestability. It requires a reduction in barriers to entry and the creation of an environment that allows rivals and business users to compete on the same terms as incumbents. Setting an access fee at the level of the profit earned by the gatekeeper from its own application builds the advantages of the incumbent into an effective entry barrier. Thus, such a fee blocks entry, which is the most important element of contestability.

36 Mark Armstrong, Chris Doyle, and John Vickers. 'The access pricing problem: a synthesis.' *Journal of Industrial Economics* (1996): 131-150.

37 See Baumol *et al*, *supra* note 31.

C. Monopoly Rents Created by Network Effects May, in Practice, Constitute the Bulk of the Gatekeeper's Margin

Before pursuing our analysis, it may be worthwhile reminding the reader of the source of the margins of the gatekeepers. The consequences of switching costs and network effects for the profits of the firms at the nexus of network effects have been discussed at length and are well documented,³⁸ and we will only briefly summarise the argument. We start with a simple model of reality. Assume that a new form of communication is emerging. There are a number of competing firms that offer very similar services. The users will all want to join the same network, each user wanting to benefit from connection with as many partners as possible. Once the market has 'tipped' and there is a winning dominant network, it is, as experience has proven, very difficult for those users to coordinate a migration to a better platform even if quality is degraded by the platform they are on, or the price increased. As a consequence, the first firm that succeeds in solidifying these network effects can generate profits that are much greater than the social benefits that are due to the quality of its network. Entrenched gatekeepers may continue innovating and improving the quality of the services they offer or they may make the product more exploitative; either way, their incentive to do so is not driven by competition or the fear of losing users to rivals. Regardless of what happens next, the main message remains valid: the potential benefits of being the first mover in the digital economy can be disproportionate to that firm's contribution.³⁹

The incumbent's network effects generate market power that disadvantages entrants. They also bring other competitive benefits to the incumbent. They create economies of scale,⁴⁰ which lower the

38 See European Commission, Directorate-General for Competition, Montjoye, Y., Schweitzer, H., Crémer, J., Competition Policy for the Digital Era, Publications Office (2019), <https://data.europa.eu/doi/10.276%07537>; Unlocking Digital Competition, Report of the Digital Competition Expert Panel (March 2019), available at https://assets.publishing.service.gov.uk/media/5c88150ee5274a230219c35f/unlocking_digital_competition_furman_review_web.pdf; Stigler Committee on Digital Platforms, Final Report (September 2019), available at <https://research.chicagobooth.edu/stigler/media/news/committee-on-digital-platforms-final-report>.

39 The distortion is even worse if the monopolist violated any competition law to achieve its position.

40 Economies of scale refers to the fact that the cost of serving more customers is

cost of the gatekeeper's activity relative to entrants. They allow for the capture of personal data that both allows for a better personalisation of the service and increases the value of advertising, which is often an important source of revenue for the gatekeeper. In most cases, entrants do not benefit from all these elements, and the ECPR rule should be adapted for all of these elements to arrive at the optimal fee.⁴¹

In addition, the DMA's fairness goal requires rebalancing the rents derived from network effects so that they are adequately captured by the participants who created those network effects.⁴² These participants of course include the business users seeking access to the gatekeeper's platform. As noted above, while any one app only adds a small amount to the value of a mobile operating system, together, the developers are responsible for close to the entirety of the network effects. For example, if all developers left the Apple app store and distributed their software through an alternative channel, the Apple App Store would lose its customers (except, presumably, those seeking the apps supplied by Apple). This pattern would render it incorrect to assign even a substantial part of the value of the network effect to the gatekeeper.

D. Innovation

Some authors argue that reforms that eliminate Access Fees will decrease the incentives for innovation. We believe that this is wrong. When network effects are strong, an epsilon advantage by one competitor can cause the market to 'tip' in its favor and thereby deliver large and durable monopoly profits. In this setting, the incentives to innovate are very strong when platforms are competing to become the nexus of strong network externalities, i.e. at the start of the industry. Once a few firms have succeeded in entering the market and establishing themselves the incumbents have weaker incentives to innovate,⁴³ and entrants are discouraged from innovating as conquering any market share becomes very difficult.

less than proportional to the number of customers.

41 There has been very little formal economic analysis of this problem. D. Yannelis, 'On access pricing with network externalities,' *Atlantic Economic Journal* (2002) 30, 186-190 provides an interesting first analysis along these lines, but he assumes that the network externalities affect only the customers of the competitor.

42 See, e.g., Crémer *et al.*, 'Fairness and Contestability,' *supra* note 2.

43 Because the value of incumbency advantage is very high, the incumbent will continue innovating to protect it. The innovation incentives will be lower than at the beginning of the industry.

Similarly, many authors assert that a low regulated price is harmful because it decreases the incentives for innovation, or analogously, that a low regulated price is tantamount to ex post holdup of efficient investments. But our arguments above demonstrate that this is misleading. The incentive that is being reduced is the incentive to ‘win’ which is not the same as the incentive to innovate. Getting a market to tip in favor of one competitor is often achieved through alliances, tying, mergers, etc, and the current environment creates excessive incentives to engage in these tactics. While that environment also includes incentives to innovate, an open ecosystem maintained through regulation arguably creates stronger incentives to innovate because business users and end users can easily move their business to a better service. As far as we know, this tradeoff and its consequence for optimal access fees, including the way in which the ECPR should be interpreted when there are network externalities, has not been explored in the economics literature.

E. Zero Lower Bound

Services supported by advertising often charge one side of the platform (often end users) a zero-cash price while charging advertisers (or other business users like sellers) a positive fee. This ‘zero lower bound’ outcome arises because the revenue from advertising (or from sellers) is so large that the gatekeeper would like to attract more end consumers. A brick-and-mortar business that wants more customers would normally consider charging a lower price. This is a common way restaurants or automobile manufacturers attract more sales, for example. In the case of digital businesses that want to attract end users so they can expose them to valuable advertising, they have lowered the price as far as they can—to zero—unless they create a mechanism they can use to subsidise consumers.⁴⁴ Such mechanisms exist in the credit card industry, for example, when cards have no annual fee and earn consumers valuable points. But if the business does not lower its price below zero (pay a subsidy to users) when those users bring in profit, the platform’s price of zero is necessarily above the competitive level.

44 Some of these authors have explored the possibility of one mechanism that would do just that, creating a market for personal data whereby platforms and others would pay end users for the use of their data through entities we envision as ‘data intermediaries.’ See generally Dirk Bergemann, Jacques Crémer, David Dinielli, Carl-Christian Groh, Paul Heidhues, Maximilian Schäfer, Monika Schnitzer, Fiona Scott Morton, Katja Seim, Michael Sullivan, *Market Design for Personal Data*, 40 Yale J. Reg. 1056 (2023).

BT analyse gatekeeper access fees relative to an ECPR benchmark. They stress the consequences of what they call the ‘Zero Lower Bound,’ that is, the fact that it is generally impractical to charge a negative price.⁴⁵ An important result in the paper is that the welfare-maximising access charge is below the profit-maximising access charge. In other words, the fee the gatekeeper charges when left to its own devices is above the ECPR fee, which is itself higher than the socially optimal fee.

In the BT model, apps earn their owners a benefit that arises through an interaction with the end consumer. This benefit could be a sale of content, valuable data, the sale of advertising, revenue from a freemium business model, etc. Because the developer bears zero marginal cost of serving an additional consumer, the developer is happy to charge a money price of zero in order to earn a positive data or advertising benefit. In the BT model (where there is no monopoly rent), the welfare-maximising access charge is equal to the benefit the developer (who may be the gatekeeper also) earns from a consumer’s use of the application.

App margins due to targeted advertising are likely to fall in Europe going forward.⁴⁶ The types of data that can be processed in the EU and the uses they can be put to are increasingly restricted by new European laws like the DMA. Moreover, these laws typically require meaningful user consent. With neutral choice architecture, it will be much more difficult to obtain ‘consent’ than it is at present. This higher cost of data will reduce the unpriced data benefit currently accruing to gatekeepers. Apps and gatekeepers may need to offer their consumers some kind of benefit to induce those users to share the personal data that powers lucrative personalised advertising. Both the increased costliness of obtaining personal data and the increased difficulty—or impossibility—

45 The importance of the ZLB to the study of platforms was stressed by J.P. Choi and D.S. Leon, ‘A leverage theory of tying in two-sided markets with nonnegative price constraints,’ *American Economic Journal: Microeconomics*, 13(1): 283–337.

46 In combination with the DSA and the GDPR, the DMA limits both access to users’ data and what gatekeepers are able to do with any user data they obtain, in particular, whether they can use personal data to target advertising. Meta remains engaged in legal process with national Data Protection Authorities and European courts over how the GDPR affects its ability to take users’ personal data and monetise it. The full effect of the GDPR is therefore yet to be determined, but, in combination with other data laws, is likely to lower the profits of a personal data harvesting and ad-supported business model. The DMA continues this trend by prohibiting the sharing of data across different functions within the gatekeeper without active user consent and is careful about requiring that obtaining user consent be free of manipulative choice architecture.

of deploying it legally after it has been collected will lower the profits of the advertising-supported business model. In the BT model, this represents a decline in the benefit earned by the app. Because in that model the optimal access fee equals this benefit, a decline in the realised benefit causes a decline in whatever remains of the optimal access fee.

F. Dynamic Competition

In addition, if the application business has the possibility of becoming a competitive threat itself in the future or serving as an access point for another competitive threat, this will create an incentive for the gatekeeper to engage in foreclosure as discussed in the Contestability section above. It is critical that this dynamic force be included in the calculation of ECPR we discussed above. A fee constructed only on the basis of ECPR principles derived from a static environment will be too small and will not neutralise the foreclosure incentives, some of which come from dynamic effects.

G. Adopting ECPR Would Require a Huge Amount of Data

As we have mentioned above, the ECPR formula has a deceptive simplicity. This is because it is presented in a framework where lots of the complications have been assumed away. But in reality, they require a great deal of internal knowledge. For instance, correcting for the effect of monopoly power requires knowledge of demand conditions. Taking into account the zero lower bound requires knowledge of the benefits that the platforms obtain from attracting more users. Taking into account innovation would require building a complex dynamic model and the theoretical results would yield formulas which would depend on various elasticities of demand with respect to price, quality, the presence of other users, and the like which would be extremely difficult to estimate. The necessary information would likely vary with each app. The ECPR is a useful tool to clarify the issues and help think about the problem of access; it is very far from a complete guide to access fees for app stores.

H. Incentive of the Gatekeeper

The likely impossibility of solving the ECPR problem intersects with the structure of the DMA. Recall that the gatekeeper must justify any Access Fee based on ECPR and show the fee satisfies the principles of

contestability and fairness. That means the gatekeeper must perform all the calculations just described on its own data and business. The first step is to quantify its profits and profit margin, which it would prefer the regulator not know. Second, it must estimate the proportion of its profit margin that is due to network effects and entrenched market power. The gatekeeper has no incentive to accurately estimate the share of its profits that are due to its entrenched market power. The higher this level, the more the regulator is emboldened to be strict, and the more it expects profits and prices to fall in the regulated environment. The greater the share of profits due to market power, the lower the optimal Access Fee that entrants must pay the gatekeeper. Therefore, the gatekeeper gains by underestimating the share due to market power and overestimating the share due to its own technological contributions. In addition to these calculations being beyond the capability of current techniques and requiring data that may not exist, the gatekeeper's incentives are fundamentally to scrutinise the project. Before a regulator can rely on any calculations of the gatekeeper regarding optimal ECPR, the perverse incentives of the gatekeeper justify applying the highest standards of proof and engaging in a careful review of the gatekeeper's analysis.

I. Structural Separation Is Required if ECPR Is Imperfect

A perfectly computed ECPR would ensure that the monopolist has no incentive to favor or to disfavor its own product. In reality, for the reasons mentioned above and some more discussed below, the ECPR will in practice always be computed imperfectly. In that case, a level playing field between the monopolist and the firms who need access to the infrastructure can only obtain under structural separation, as we argue below.

The DMA's goals require that any Access Fee not render access ineffective. To obtain that outcome the Access Fee must not include the impact of market power, either current or future; it must account for the zero lower bound, if present; and it must be adapted to the variety of apps. As we have explained above, a fee proposed by the gatekeeper may have so much asymmetric information and bias built into it that this standard is not met. The optimal ECPR fee may be impossible to calculate in an environment of imperfect data, change, uncertainty, and asymmetric information.

Suppose the regulator forecasts that the calculated ECPR will always be imperfect in some way. For the incentive reasons just previewed, the regulator might expect the Access Fee to be too high because this will choke off competing app stores and leave the gatekeeper as a monopolist. Another risk is that because ECPR is too low and the gatekeeper will earn less profit from the third party's sale than it can through its own, the gatekeeper will have an incentive to self-preference and foreclose. A third real-world problem is that the firm does not operate according to the simple neoclassical model where profit maximization is carried out at the level of the corporation. All these operational concerns can be addressed with structural separation.

When ECPR is imperfect the regulator must scrutinise the costs of the gatekeeper and continue to try to improve the Access Fee, while observing the strategies of all parties and any attempts at foreclosure by the gatekeeper. The regulator cannot track the information it needs until the platform and the application formally separate into divisions that do not share costs or operational responsibilities. This solution gives the regulator transparency into the sources of costs and how incentives are being transferred. For this type of real-world reason, organised regulators often require that a gatekeeper who is permitted to charge an access fee must carry out structural separation of its application business.

For example, when the U.S. Federal Communications Commission sought to restrain AT&T to the communications market to protect competition in the burgeoning data processing market, it developed what it termed 'maximum separation' safeguards in addition to mandating access fees.⁴⁷ In the 1960s and seventies, the FCC undertook multiple reviews of telecommunication companies' structures ('The Computer Inquiries'), and concluded that common carriers like AT&T were permitted to enter the unregulated data market only through fully separate subsidiaries.⁴⁸ The stated goal of these structural restrictions—

47 Final Decision and Order, In re Regulatory and Policy Problems Presented by the Interdependence of Computer and Communication Services and Facilities (First Computer Inquiry), 28 F.C.C.2d 267 (1971) (Computer I Final Decision) (1971 FCC LEXIS 2066) paras. 9-10 ('[T]he furnishing of such data processing services by carriers should not inhibit free and fair competition between communication common carriers and data processing companies or otherwise involve practices contrary to the policies and prohibitions of the anti-trust laws...[A]ppropriate regulatory treatment of these concerns requires a maximum separation of activities which are subject to regulation from non-regulated activities involving data processing.') (internal quotations omitted).

48 The FCC decided that communications companies of a certain size — not smaller,

and their ultimate effect—was to safeguard contestability.⁴⁹ Structural separation and an ability to control the specific incentives applied to each part of the business is a necessary precaution when the regulator is concerned that the gatekeeper's ECPR calculation might be imperfect.

Conclusion

The DMA contains several provisions that enable rival developers and app stores to avoid paying the gatekeeper's access fees by either moving more easily to rival channels or disintermediating the gatekeeper entirely. To the extent these alternative channels provide a good user experience, they will pressure the gatekeeper to lower its own distribution fees to remain competitive. For this reason, it is critical that gatekeepers do not evade those provisions of the DMA designed to ensure fairness to distributors and third-party app stores, and to promote contestability both on and for the gatekeepers' operating systems and app stores.

The Commission has, for good reason, opened proceedings to determine whether Apple's fee structure imposing access charges on app stores and third-party apps complies with the several provisions of the DMA governing to its CPS's. We think it is plain that Apple's current fee structure violates the DMA, and we expect the Commission will find noncompliance. Our analysis shows that an access fee of zero, is DMA compliant. A zero Access Fee also advances fairness and contestability, and is practical, proportionate, and non-punitive. For these reasons, we advocate the Commission utilize its power under DMA 8(2) to specify an Access Fee of zero unless Apple comes up with an alternative proposal which is DMA compliant. For the reasons provided above, we are not sure that such an alternative exists.

newer entrants — had to abide by the new structural safeguards. *See* Amendment of Section 64.702 of the Comm'n's Rules & Regs, (Second Computer Inquiry), 77 F.C.C.2d 385 Para. 12 (1980); 1980 FCC LEXIS 188 *389 ('We find that only AT&T and GTE present a sufficiently substantial threat such that they should be required to establish separate corporate entities for the provision of enhanced services and customer-premises equipment. We will not require any other underlying carrier to form separate entities for the provision of these services and CPE.').

49 *See* Tentative Decision of the Commission, *In re* Regulatory and Policy Problems Presented by the Interdependence of Computer and Communication Services and Facilities (First Computer Inquiry), 28 F.C.C. 2d 291 (1970) (Computer I Tentative Decision) (1970 FCC LEXIS 826); Computer I Final Decision, *supra* note 43.

This zero Access Fee would not prevent Apple from charging a Review Fee to subsidise security checks that are related to its costs, fees for access to Apple's own app store under terms that are FRAND and available publicly, and DMA-compliant advertising. Nor would it prevent Apple from capturing the value it contributes to the app and app store ecosystem elsewhere in that ecosystem, most obviously through the cost of handsets and handset-related services. But what it cannot do is attempt to monetise its contribution to the value of that ecosystem by charging Access Fees to its rivals that render their access to iOS or the App Store 'ineffective.' Nor may it charge any combination of other fees or impose conditions that individually or collectively render that access ineffective; doing so would run afoul of the DMA's anti-circumvention provision.

We emphasise here that the DMA expressly empowers Apple to design its own effective compliance scheme if it can devise one that that would satisfy the requirements of the DMA and it considers to be superior to the one suggested here. Whatever fee Apple proposes must adhere to Articles 6(4) (allow effective access by third-party app stores) and 5(4) (allow apps and app stores to communicate and consummate transactions with end users through channels of their choosing) as well as satisfy Article 6(7) (allow functionalities available to Apple services to third parties free of charge), Article 8(1) (imposing obligation to demonstrate effective compliance) and Article 13(4) (prohibition of circumvention). So far, however, Apple has failed to make such a showing. The Commission therefore should specify app stores fees as we recommend above.

The appendix, "Summary of Apple fees on large commercial developers (as we understand them, simplified)", can be found in the original article, published online at <https://tobin.yale.edu/research/access-pricing-app-stores-under-digital-markets-act>.

PART III.

Personal Data: Privacy and Safety

A digital business's ability to provide a personalized quality service often depends on its ability to gather data from its users to train an algorithm, choose features to offer, and the like. Businesses that support themselves with revenue from advertisers likewise want to select the most valuable ad to show to a user and need data to find the best match. Personal data are therefore a valuable input for digital businesses. The big global platforms have developed the strategy of deploying their users' personal data across the different services they offer, making them better, and making them better than services of rival business that do not have such data. Users are required to consent to the collection and use of their data in order to access platform services. As a result, in the United States the value of personal data accrues to the monopoly platform that collects it. In Europe, however, courts have ruled that the privacy of personal data is a fundamental human right. New laws give consumers control over the use of their personal data. The rules require real choice (presented in a way that is understandable and neutral) and also require that users must have access to substantially similar service even if they do not agree to share personal data.

Ronal Coase famously conjectured that if an asset is valuable, regardless of who starts out with the property rights, free trade will eventually cause it to be used in the most productive way. That powerful notion suggests that consumer control of their data should result in some kind of tangible benefit to users who agree to share it with the platform. Data markets could deliver financial or in-kind benefits. This section of the volume explores the legal and regulatory environment needed to support healthy markets for data; and how regulations can create competition in those markets that benefits users.

Chapter 7.

Market Design for Personal Data

September 6, 2023*

I. Introduction

A. The Problem

It is now generally understood that personal data—that is, data that relate to individual consumers—drive digital markets. Personal data underlie targeted advertising, which draws billions of dollars into ad-supported markets. Personal data are useful for other purposes as well. Firms in digital markets rely on personal data to deliver their core products and services—we refer to these collectively as “web services”¹—to hone and improve them, and to recommend related products and services. These data facilitate innovation, allowing yet more services and “smart” products with increasingly personalized functionalities. Personal data can allow governments to deliver better public services, such as transportation systems, or can help researchers better understand how humans interact with algorithms and which policies might best serve society. And data can also facilitate competition, by improving quality and providing insight into consumer conduct that encourages entry. In these various ways, the massive quantity of personal data currently collected undoubtedly contributes to consumer welfare.

But there also are downsides to the collection and use of personal data on such a grand scale. “Surveillance capitalism,” as Professor

* Previously published as Dirk Bergemann, Jacques Crémer, David Dinielli, Carl-Christian Groh, Paul Heidhues, Maximilian Schäfer, Monika Schnitzer, Fiona Scott Morton, Katja Seim, and Michael Sullivan, “Market Design for Personal Data,” *Yale Journal on Regulation* 40 (2023): 1056-1120.

1 We use the term web service to refer to all online services—whether they are websites or apps on a mobile device—with which web users interact or that seek to use web users’ data for service provision, ad targeting, conducting analytics, product improvement, or any other reason.

Shoshana Zuboff has termed it,² has blurred the line between the personal and the public, and has commodified our habits, interests, and beliefs in ways that can feel distasteful and invasive. Massive data collection also has made information about us more accessible to government and commercial actors who often face little to no accountability for its misuse.

Many of the reactions and proposed responses to the current situation examine these concerns through the lens of privacy. Economists, however, look at this same set of facts—massive data collection from users of web services, a stranglehold over data by a handful of large firms facing weak competition, and monetization largely through the sale of targeted advertising—and see an *additional* set of problems.

- Personal data fuel digital markets, but the users, whose unique set of characteristics, actions, and experiences give rise to the data, receive no cash compensation for the personal data they generate. Users generate a resource of tremendous value—personal information—and yet firms extract this resource without payment (other than the provision of digital goods and services in exchange). This exchange stands in sharp contrast to what we see in other markets, in which those who control resources are paid for their extraction or use.³
- We see a handful of firms that have significant market power controlling vast swathes of personal data. One way this market power manifests itself is in lower quality services, including the collection of personal data without effective user control, and the use of that data to extract a surplus from consumers.
- Personal data now are collected in a huge variety of settings, and yet there is no basis to believe these data are put to their highest use. The private firms that control data have no incentive or mechanism to share data for valuable research or public benefit (transportation

2 See generally Shoshana Zuboff, *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power* (2019)

3 For a description of externalities arising from the social use of personal data, see generally Dirk Bergemann, Alessandro Bonatti & Tan Gan, *The Economics of Social Data*, 53 RAND J. ECON. 263 (2022).

planning or prevention of technology addiction, for example), or with other private firms that could use the data to offer better services to consumers.

We would be less concerned with the fact that users are paid in barter rather than in cash for the extraction and use of their personal information if it appeared that the trade were a fair one. But the evidence strongly indicates that it is not. Data-driven markets in recent years have consistently generated tens of billions of dollars in annual profits for the largest digital platforms. These profits are significantly larger than would be expected in competitive markets and suggest the exercise of market or even monopoly power.⁴

We also would be less concerned if there were evidence that the data are being used for purposes other than simply advancing each firm's independent financial interest. We are aware of no evidence that this happens on a large scale, however. And in a classic example of the exception proving the rule, the few instances in which large firms *have* allowed data generated through use of their products to be used in the public interest, seem to have failed or backfired *specifically because* web users distrust the large firms and suspect they will use the data to benefit themselves rather than to advance the users' interests. Covid exposure tracking apps, which faced significant headwinds in the United States especially, are a key example.⁵ Also, new entrants and competitors cannot access the biggest trove of data even if they would use them in ways that are socially beneficial.

Natural forces in a well-functioning market should correct for the significant economic profits enjoyed by the largest platforms, quality or control rights below competitive levels, and the inefficiencies that keep data out of the hands of those who would put it to good use. Market forces would require large platforms and other firms that rely

4 For a more detailed discussion of the economic forces driving market power in digital markets, see Fiona M. Scott Morton & David C. Dinielli, *Roadmap for a Digital Advertising Monopolization Case Against Google*, OMDYAR NETWORK (May 2020), <https://omidyar.com/wp-content/uploads/2020%9/Roadmap-for-a-Case-Against-Google.pdf> [<https://perma.cc/PY6H-L4F9>]; and Fiona M. Scott Morton & David C. Dinielli, *Roadmap for an Antitrust Case Against Facebook*, 27 STAN. J.L. BUS. & FIN. 267 (2022).

5 See, e.g., Jessica Rich, *How Our Outdated Privacy Laws Doomed Contact Tracing Apps*, BROOKINGS INST. (Jan. 28, 2021), <https://www.brookings.edu/blog/techtank/2021/0%28/how-our-outdated-privacy-laws-doomed-contact-tracing-apps> [<https://perma.cc/QPQ9-GEYJ>].

on personal data to share some portion of the billions in annual surplus with web users.⁶ The firms might do this through a combination of cash payments in exchange for the right to use personal data and/or additional product improvements that lower quality-adjusted prices. If the market were functioning as it should, we also would expect the platforms that facilitate digital advertising to share the surplus with publishers that supply digital ad space (through higher pass-through rates of total ad spend) and with advertisers (through lower ad prices). Firms that currently hoard data that could benefit other suppliers of services, public or private, would have incentives to share data at reasonable prices.

Rather than a competitive data market, what we see is a market failure. The status quo regarding personal data collection and use presents concerns about competition, efficiency, innovation, and the distribution of the surplus generated in digital markets, *in addition* to the various privacy concerns that others have identified. Our proposal offers a more comprehensive set of potential solutions than do other proposals we've examined that address the collection and use of personal data. We attempt to solve for *three principal market failures* with respect to personal data within one policy framework:

1. the failure to provide users the ability to control how their personal data are collected and used--which contributes to a status quo that threatens user privacy, lowers the effective quality of online services, and facilitates market power;
2. the failure to provide users a way to derive financial benefit from the data they generate--which enforces a status quo that distributes surplus from digital markets to platforms rather than consumers and facilitates market power; and

6 Digital advertising is not the only setting in which firms with access to substantial amounts of data can use the data to divert surplus to themselves and away from consumers. For example, in the context of third-degree price discrimination (i.e., charging different prices to different categories of consumers), access to large amounts of personal data can help a firm segment consumers into groups whose members are charged close to the maximum they would pay. Personal data help the firm to identify the appropriate amount to charge each group. See generally Dirk Bergemann, Ben Brooks & Stephen Morris, *The Limits of Price Discrimination*, 105 AM. ECON. REV. 921 (2015).

3. the failure to ensure that the data that are collected can be put to their highest use, including by firms other than the big digital platforms, as well as the nonprofit sector and governments—which generates a status quo that implicates or even impedes innovation.

Moreover, these three problems appear to be related. The lack of effective privacy regulation or other restrictions on data collection allows large platforms to collect and use data nearly unfettered, giving them *higher monetization rates*; these advantages promote and protect market power directly. Because platform market power derives so directly from the platforms' data advantages, the platforms have a strong incentive to prevent others from accessing or benefiting from the data they perceive to be "theirs." The platforms' exclusionary approach puts their data out of reach of rivals who might use the data to train their own algorithms, design competing products, or prepare for seamless interoperability, for example. The exclusionary approach also frustrates legitimate requests from the government or from academic researchers,⁷ allowing platforms to forestall or delay the sort of complete understanding of their business practices necessary for effective regulation. Forestalling regulation, in turn, preserves market power. That market power, in turn, insulates the platforms from the constraints on data collection and use that vigorous competition would impose.

B. A Proposed Solution

This Article explores a possible intervention that—unlike antitrust enforcement alone or enhanced privacy regulation alone—would address competition, efficiency, *and* privacy concerns, directly and simultaneously.⁸ We offer the idea of a "data intermediary," bound by

7 Large platforms sometimes claim the data themselves constitute trade secrets and cannot be disclosed, or they assert that disclosure would undermine user privacy. See *A Preliminary Opinion on Data Protection and Scientific Research*, EURO. DATA PROT. SUPERVISOR 9 (Jan. 6, 2020) (discussing "[c]orporate secrecy as a barrier to research"); Jef Ausloos, Paddy Leerssen & Pim ten Thije, *Operationalizing Research Access in Platform Governance*, ALGORITHM WATCH 25 (June 25, 2020).

8 In this way, our proposal may serve as a counterexample to the popular notion that efforts to enhance competition in digital markets necessarily undermine privacy interests and efforts to protect privacy necessarily undermine competition interests. We perceive no unavoidable tension between competition and privacy. The notion seems to reflect misconceptions about interoperability, a tool that these authors and others have proposed to encourage entry and facilitate consumer choice in markets including

fiduciary duties to users, empowered to monetize users' personal data—a category we define above and delineate further below—and permit other uses in accordance with user instructions. This proposal is similar to other proposals that rely on some form of intermediary that sits between consumers and firms that wish to use their personal information. Prior proposals generally would empower the intermediary to prevent misuse of personal data or increase user control, and some might facilitate innovative uses of data, but they are not designed to monetize the data on the users' behalf.⁹

Our proposal would encourage the development of a market for personal data in which users who generate personal data are assumed to *control* their data in the first instance. In the United States, laws creating the right for consumers to control their personal data would need to be adopted, or courts would need to acknowledge that existing statutory schemes or common law principles already provide such rights.¹⁰ In

the social network market. See *Online Platforms and Digital Advertising*, COMPETITION & MKTS. AUTH. 34 (July 1, 2020), https://assets.publishing.service.gov.uk/media/5efc57ed3a6f4023d242ed56/Final_report_1_July_2020_.pdf [<https://perma.cc/64LE-D9LQ>]; Fiona M. Scott Morton, Gregory S. Crawford, Jacques Crémer, David C. Dinielli, Amelia Fletcher, Paul Heidhues, Monika Schnitzer & Katja Seim, *Equitable Interoperability: the “Super Tool” of Digital Platform Governance*, 40 YALE J. ON REGUL. 1013 (2023). Interoperability certainly could make a user's personal data accessible to additional firms, but there is no reason to think personal data is more safe and secure with a large platform than with a smaller firm that must be licensed to interoperate with it. Further, interoperability need not allow the interoperating firm to do whatever it wants with personal data to which it gains access. The interoperating firm only gets to do what the large platform gets to do; there are no new or additional data uses that could raise “privacy” concerns. A recent theoretical study highlights the potential consumer welfare benefits of data linkages—i.e., data-sharing relationships between firms. Rossella Argenziano & Alessandro Bonatti, *Data Linkages and Privacy Regulation*, 13-18 (Mar. 6, 2021), <https://www.mit.edu/~bonatti/protection.pdf> [<https://perma.cc/H5LK-QTM5>]. Thus, interoperability requirements could lead to welfare benefits.

9 A notable exception is that offered by Eric Posner and E. Glen Weyl, who posit that the large platforms exercise monopsony power over users, whose personal data has marginal value and who therefore should be compensated for it. See Eric A. Posner & Glen Weyl, *Radical Markets: Uprooting Capitalism and Democracy for a Just Society* 177-194 (2018).

10 Creative lawyers, however, are beginning to pursue lawsuits that include statutory and common-law claims that presume users have various rights in the data they generate. Notable among these is a proposed class action filed in a California federal court against OpenAI (the developer of DALL-E and ChatGPT) and Microsoft for collecting data about plaintiffs and using the data to train its AI products without permission from the plaintiffs and without compensating them. See *Class Action Complaint*, P.M. v. OpenAI LP, No. 23-cv-3199 (N.D. Cal. June 28, 2023). The data at issue include data

Europe, the General Data Protection Act (GDPR), already confirms that “data subjects”—the individuals we call users—have a right to restrict the “processing” their data.¹¹ For that reason, “processing” of personal information is lawful under GDPR *only* when certain conditions are met, the most important being consent of the data subject to processing for a specific purpose.¹² The presumption we adopt here—that users control the data they generate—would imply a similar corollary: that a web service may use personal data, including data that would not exist but for the user’s interactions with the web service, *only if* authorized by specific statutory or regulatory permission. In all other instances, the legal regime we propose would require that web services buy the right to use personal data from a data intermediary acting on users’ behalf.

1. Our Proposal Governs the Collection and Use of All Personal Data

We propose a market for all personal data, without regard to whether the law deems the data or the information the data reveal to be “private” in a formal sense. Our proposal therefore offers something additional and complementary to proposals that focus narrowly on enhancing protections only for private information. We take this broader approach with the aim of capturing the full set of data extraction and use practices that contribute to the market failures described above.

The narrower approach would not offer a complete solution because many extraction and use practices that cause consternation and/or generate firm profit (and should therefore give users a right to

users generate through their interactions with web services such as location information, keystrokes, search queries, image data, health information, etc.—all of which constitute what we in this Article term “personal data.” Plaintiffs allege that defendants collect the relevant data via apps such as Spotify and MyChart that incorporate OpenAI’s products. *See id.* ¶ 16. Based on these alleged facts, plaintiffs assert several causes of action that lie only if plaintiffs have a proprietary or property interest in the personal data they generate through their interactions with web services. The causes of action include “larceny/receipt of stolen property” (*id.* ¶¶ 575-92), “conversion” (*id.* ¶¶ 593-97), and “unjust enrichment” (*id.* ¶¶ 598-606). Plainly, this case (and the fate of these three claims in particular) merits monitoring. So too do the small number of cases in which courts already have acknowledged users’ proprietary or property interests in the data they generate. *See id.* ¶ 576 (collecting cases).

11 *See* Council Regulation 2016/679, art. 4(2), 2016 O.J. (L 119) 1, 33 (“[P]rocessing’ means any operation or set of operations which is performed on personal data or on sets of personal data ... such as ... use ...”).

12 *See id.* art. 6(1)(a).

compensation and to control) rely on personal data that, depending on circumstances and jurisdiction, might not be considered private. Private data can become nonprivate through disclosure, for example, and yet disclosure might not justify depriving the user permanently of any ability to control, or seek compensation for, the use of the data. (Consider someone who informs friends and family of a cancer diagnosis via a public Facebook post.) And some nonprivate data can be used in ways that feel intrusive or exploitative and therefore ought to support a right to compensation and control. (Consider someone who has parked her car in a spot reserved for patients at an abortion clinic and who is served “ads” produced by anti-abortion advocacy groups.) More generally, mobile users can be tracked across the web using seemingly innocuous, public data about their phone settings that is provided automatically when they access web services, such as keyboard layout and operating system version.¹³ It is clear, therefore, that expansive collection and use of various forms of nonprivate data underlie some of the most urgent concerns with data-driven products and markets. These data can be highly valuable and should not be excluded from the market for personal data we propose herein.

We offer the diagram below to demonstrate the fundamental architecture of our proposal, which shows how it would govern the collection and use of *all* personal data:

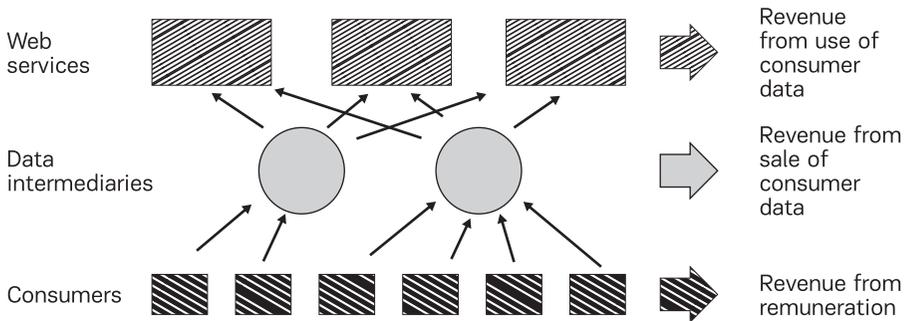


Figure 1. Schematic Identifying Principal Categories of Participants in Data Intermediary Markets

13 See Matt Burgess, *The Quiet Way Advertisers Are Tracking Your Browsing*, *Wired* (Feb. 26, 2022), <https://www.wired.com/story/browser-fingerprinting-tracking-explained> [<https://perma.cc/8S9Q-L4PL>] (describing how device fingerprinting based on basic phone settings can be combined with sensitive personal data).

2. We Propose a Control Right that Includes a Right to Be Paid for Data Use

This is why our proposal includes a broad *control* right that is more akin to the right to restrict processing of all personal data, rather than relying principally on any effort to enhance privacy *per se*. The control right envisioned would encompass the ability to decide what sort of data could be collected *and* the purposes for which the data could be used. The control right also would imply a right to be paid. Because users would not be required as a general matter to permit any collection or use of personal data, users could demand payment from web services who want to use it.

Recognizing a control right with these two principal features—(1) the ability to limit collection and use of personal data; and (2) the ability to bargain for payment—would constitute a significant change in the legal and economic landscape in all jurisdictions of which we are aware. Europe’s GDPR, for example, acknowledges that individuals have a continuing right to exercise some control over the use of data that relate to them. But the GDPR does not envision that firms should pay to use such data or provide a mechanism for any such payments. Recognizing the two-part control right would be even more transformational in the United States, where individuals have few rights with respect to their personal data other than the right to prevent disclosure of that which is deemed private and to seek damages if the disclosure of private data causes harm.

3. Designing a Market for Personal Data Is Complex, Perhaps Prohibitively So

Although it is straightforward to explain why establishing this new right with respect to personal data *should* have the beneficial consequences identified above, it is a complex undertaking to design a market that will facilitate that outcome. The bulk of the Article below traces through the economic issues that would arise in creating such a system.

Creating and maintaining the institutions, procedures, and oversight necessary to permit users to exercise the newly proposed control right in a manner that would yield the desired competition and privacy benefits is complex and expensive, and some might worry whether the benefits justify the effort. Other proposals addressing the use of personal information could achieve some similar results, with less effort. A tax on digital advertising, for example, could redirect platform profits to public

uses that benefit users indirectly, such as schools, public green spaces, or internet access subsidies. A ban on digital advertising that relies on personal data for targeting could significantly reduce privacy concerns relating to data collection and use. It would limit advertisers to placing ads based exclusively on context—a running shoe company might pay to have its ads appear alongside an article about the New York Marathon, whereas a high-end women’s shoemaker might pay to have its ads appear alongside an article about Milan Fashion Week.

In this way, such a ban could reduce the competitive advantages that large platforms enjoy due to their access to large and rich data sets. But such a ban might also decrease welfare in that consumer “search costs”—the time and effort required to find products and services that match the consumer’s need and ability to pay—would increase.

Targeted advertising’s effect on search costs provides one example of the obvious fact that *some* data collection, *some* data uses, and *some* targeted advertising benefit consumers. Too much, or the wrong kind, of any of these activities may harm consumers. Our policy proposals reflect our goal of creating a market for personal data that is sufficiently efficient such that competition compels firms to collect, use, and share data, including for ad targeting, in amounts and ways that increase total welfare. None of the authors of this Article can guarantee this result. We nonetheless maintain that the thought experiment we engage in here is decidedly worth the effort, if for no reason other than to understand exactly how hard it might be to generate a market for personal data.

The remainder of this Article proposes minimum policies we consider to be necessary to allow a market for personal data to develop and exist over time and to operate in a manner that permits users to exercise both elements of the new control right described above: (1) the ability to limit collection and use of data; and (2) and the ability to be paid in a manner that solves for the three interrelated market failures highlighted above. We do not purport to offer a blueprint. Nor should our proposals be read by any government agency or official as a set of instructions on how to create a perfectly functioning market for personal data. Rather, we have applied our knowledge of economic theory, behavioral economics, strategic behavior of firms, and the current operation of data markets to identify critical features of such a market. An immediate conclusion is that a successful data market will not function without affirmative policy interventions by a regulator.

We noted above that in the market we envision, users' control right confers the ability to demand payment in exchange for the right to use their personal data. But it is apparent that no individual could be expected to negotiate for payment every time a web service uses their personal data, or even to negotiate payment schedules with web services that might use their data repeatedly or consistently. Nor could we expect web services to contract for each use of personal data, or even enter long-term or omnibus agreements with each individual whose data it might use.¹⁴ Nor could researchers or other market participants who would study the data be able to obtain individual consent from the thousands or millions of individuals to whom data might relate. Individuals and firms would be overwhelmed, commerce would grind to a halt, and every human with an internet connection would tear their hair out.

4. Data Monetization Requires New Entities: Intermediaries Guided by User Instructions and Fiduciary Duties

Our central policy proposal provides a potential solution to this problem: regulations should establish a new kind of entity called a data intermediary. We propose that data intermediaries serve as the users' exclusive agent for permitting use of data consistent with user instructions, as well as the users' exclusive agent for purposes of monetizing that data and remitting a portion of the money received as payment for use of the data to the users. Each data intermediary would act as a one-stop shop for its users, who would exercise their control right through that intermediary. Because of this feature, users need not have any direct contact with web services about the services' use of their personal data. Each data intermediary also would serve as a one-stop shop for web services with respect to the personal data of the intermediary's set of customers. And the intermediary would serve as a similar one-stop shop for web services, researchers, and others who have

14 Individual negotiations of this sort would be unlikely to shift significant surplus from the large platforms to users in any event. The marginal value to the platform of an individual user's personal data is small. If a platform can use the personal information of 100 million users to sell targeted advertising, for example, adding one more person to the group of potential targets does not change the price it can charge for advertising. This is the case even if average advertising spend per user is large, \$500 for example. The individual user may want a portion of that \$500, but the platform has no incentive to pay them anything close to that amount, or indeed anything at all.

no direct link to users but who seek access to personal data for market or product or other forms of research.

The design of the intermediary suggested in our proposal aims at providing users the highest value possible for the use of their personal data. Because ours is a market solution, we want the value of the payments to be determined through competition among the intermediaries. It therefore is crucial that the market design enhances competition. We discuss the way a regulator could enable consumers to choose intermediaries offering the highest payment and best service and switch easily in response to both service and payments.

Our proposal also addresses the danger that web services exploit consumers' behavioral biases to encourage them to share more data than they would if choice were more transparent and understandable. Real-world consumers require careful design of the choice architecture surrounding data sharing to protect them from poor choices and exploitation. Our proposal envisions a set of standard data sharing tiers from which a web user can select a level that most closely reflects their degree of comfort or discomfort with the collection and use of their data. The "sharing tier" determines what kind of personal data the intermediary can monetize on the user's behalf, and on behalf of all other users who have selected that sharing tier. We share the concern of many that a focus on remuneration would steer web users toward excessive sharing of their data despite the risks of data sharing, which are less salient than monetary rewards, and despite the possible social or societal harms. We take this possibility seriously, and we consequently develop our proposal to mitigate risks from sharing data.

The surplus at stake is large. The profits generated by the data-driven businesses of tech companies suggest that the economic value derived from consumer data is substantial. Consumers are likely not the only parties to benefit financially from a competitive data market. A competitive market for data would allow smaller entrants and innovators to enter and compete for the large revenues this sector generates. Today in the United States, advertisers spend hundreds if not thousands of dollars per year per person on digital advertising that uses personal data for targeting.¹⁵ An important task for economists is to develop mechanisms to return control and a portion of that value to households so that in future years all consumers will share in the thousands of dollars in value they generate.

15 See *infra* app. 2.

5. Ours Is One Idea among Many; It May Not Be the Best

We are not the first to consider regulatory solutions to the problems of digital markets as enumerated above. Academics and think tanks around the world have put forward ideas for possible solutions. The motivation of almost all of them is to empower users to share and control personal data. Relatively few are focused on the economics of data markets—the efficient selling of information—and competitive remuneration for consumers. But because of the significant sums at stake, and the ability of competitive data payments to reduce deadweight loss and redistribute income to consumers, economic solutions could be very valuable.

The establishment of data intermediaries has also been suggested by several distinct groups, including the European Union, the UK Centre for Data Ethics and Innovation, and RadicalxChange. Moreover, there are private initiatives such as the web browser Brave and the startup Solid that aim to endow consumers with greater control over their data within the existing regulatory framework.¹⁶ Brave is a web browser designed to minimize data collection at its source, by blocking all trackers and preventing data storage by first- and third-party cookies, thereby reducing the amount of data collected in the first instance.¹⁷

It is worth pausing to consider Solid as a particularly creative approach to solving many of the same problems we try to address with intermediaries.¹⁸ Solid is a specification aimed at giving individual users control over collection and use by empowering individuals to store personal data in a virtual pod. Users choose what to put in and what to

16 See *Opinion 9/2016: Opinion of the European Data Protection Supervisor on Personal Information Management Systems*, EUR. DATA PROT. SUPERVISOR (Oct. 20, 2016) https://edps.europa.eu/sites/default/files/publication/16-10-20_pims_opinion_en.pdf [<https://perma.cc/EQM7-8LUP>] (European Union approach); *EDPS TechDispatch: Personal Information Management Systems*, EUR. DATA PROT. SUPERVISOR (2020), <https://data.europa.eu/doi/10.2804/11274> [<https://perma.cc/5QCX-KEJH>] (same); *Unlocking the value of data: Exploring the role of data intermediaries*, UK DEP'T FOR DIGIT., CULTURE, MEDIA AND SPORTS (July 22, 2021), <https://www.gov.uk/government/publications/unlocking-the-value-of-data-exploring-the-role-of-data-intermediaries/unlocking-the-value-of-data-exploring-the-role-of-data-intermediaries> [<https://perma.cc/YH6U-7BD6>] (United Kingdom approach); *The Data Freedom Act*, RADICALXCHANGE (Feb. 18, 2020), <https://www.radicalxchange.org/media/papers/data-freedom-act.pdf> [<https://perma.cc/7PR8-DVSA>] (RadicalxChange proposal).

17 See *Advanced Privacy*, Brave, <https://brave.com/privacy-features> [<https://perma.cc/XE52-C82T>].

18 *About Solid*, Solid, solidproject.org/about [<https://perma.cc/9WST-Z5D7>].

let out (and to whom and for what purpose), thereby decentralizing the web by providing its users ownership and control over their data.¹⁹

Tim Burners-Lee, the inventor of the World Wide Web, created Solid in 2016.²⁰ Solid provides its users with data ownership and privacy by, first, providing personal data storage units called “Pods” and assigning each Solid user a unique identifier.²¹ The sort of data, including encrypted data, that a user can store in a Pod includes information about the user’s preferences and data related to the user’s behavior on the web. Solid is not solely a platform for storing encrypted data, however; Solid also facilitates sharing data with third parties in a controlled manner. Users can dictate how they share their data with third parties using Solid’s settings. Solid is an open standard and a platform that changes certain features of the Web by changing how web services access consumer data.²²

Our data intermediaries are similar to Solid in that both consolidate and process consumer data. Unlike our intermediaries, which would act as fiduciaries for consumers in managing and sharing their data, Solid provides consumers with direct control over their data. While both our proposal and Solid aim to protect consumer privacy by providing consumers control over their data, only our proposal leverages the value of consumer data to web services to benefit consumers in the form of cash and other forms of payment in addition to the simple barter of the service in exchange for data and attention.

Further, Solid does not appear to solve the collective action problems that currently stand in the way of consumers’ ability to demand remuneration for their personal data. Remember that our proposed data intermediaries would manage many users’ data—millions of users, in fact. This would allow them to bargain on their users’ behalf with web services in a way that a single Solid user simply could not. Web services will not value a single Solid user’s data that highly. They would, however, value the massive amounts of data that a data intermediary stands to offer. Intermediaries’ relatively significant bargaining power as compared to the minimal power called on by any individual Solid user means that our proposal would result in compensation to consumers who choose to

19 *Id.*

20 *Origin*, Solid, <https://solidproject.org/origin> [<https://perma.cc/63LQ-G3ZD>].

21 Solid, *supra* note 18.

22 *Id.*

share their data, which owes to the fact that data intermediaries would be able to bargain with web services. Solid does not currently feature any scheme allowing consumers to be remunerated for their data.

Solid does share with intermediaries the potential benefit, if widely adopted, of putting pressure on app and platform developers that could result in increased innovation and creativity. This is because, absent uninhibited and aggressive data collection, web services would need to compensate users for data or improve their infrastructures to retain consumers.

We are not optimistic Solid ever will be widely adopted, however. Some advanced web users may desire to personally manage their data in the ways Solid makes possible, but the historical reluctance of web users to fine tune their privacy settings online suggests that most web users would prefer to simply set a general privacy level and then allow specialized intermediaries to handle data management on their behalf subject to the selected privacy level's constraints.

Shifting topics, we note that our proposal also adds to the budding literature on data intermediaries by analyzing the implications of economic theory for an advantageous design of intermediaries.

We note that setting up working data markets is difficult and policymakers may determine it is not worth the effort. The difficulties inherent in implementing our policy recommendations are multiplied by the need for authorities to coordinate establishing and then regulating the market across jurisdictions.²³ Even if a perfect regulator followed all

23 The difficulties are also multiplied by the fact that our proposal assumes that all users are legally and functionally competent to participate in the market, even though that clearly is not the case. Minors are an important example. In our view, firms ought to pay *all* users for the use of their personal data, including minors—a key demographic targeted by advertisers. Our proposal, however, does not address personal data of minors, which web services collect, use, and monetize much in the same way as they do the personal data of adults. Determining the age at which minors should be presumed sufficiently mature to make decisions about their personal data is beyond the scope of this Article. So too are the laws governing who can act on behalf of minors and under what circumstances. Such questions are important; minors seem to us especially vulnerable to exploitation in this market. The potential cash payouts may seem especially large to minors, causing them to undervalue their own privacy and related interests, or to over-discount the dangers the data collection and use could cause them or others. We also can envision various practical difficulties in allowing minors to participate in the market we propose, including the fact that many minors presumably are unbanked (raising the question whether intermediaries should pay such minor annually for the use of their data, or rather place the money in individual trusts). Those who do have access to accounts may share control with parents or guardians whose interests are not aligned with those of the minor. And finally, we know that age verification, a seemingly necessary first step in permitting participation by minors, presents its own set of dangers that cause

the suggestions in this Article, we cannot be certain that it is possible for a market in personal data to flourish. However, all authors feel strongly that the status quo—simply ceding all the value of personalized digital advertising to a handful of big firms, allowing those firms to control the use of the data, and accepting the inefficiencies of current markets that impede high-value use of data by third parties—is not acceptable. That profit is generated by the information and activities of consumers who, for both efficiency and fairness reasons, should share in it.

Our proposal is grounded in economic theory and evidence, which we highlight in the discussion. There is still much that is unknown about the economics of data markets, which necessarily creates uncertainty and limits the specificity of our proposals. Further research and experience across different settings and jurisdictions will help to solidify our understanding in these areas. Partly for this reason, not all authors are equally enthusiastic about all the ideas in this document, but all authors agree that the proposal provides a useful starting point for debate and discussion on the future of digital markets. More importantly, each author thinks that the endeavor of exploring ways to compensate internet users for the collection and use of their data is of utmost importance from the standpoint of efficiency and fairness, in addition to concerns about competition and privacy.

Throughout the discussion, we refrain from making prescriptions about technical details required for implementation such as where data are stored or how they travel from one place to another. Our economic analysis does not depend on these choices. More importantly, if a system similar to our data-intermediation regime were to be adopted, this system should use the most efficient and appropriate technology available at that time for fulfilling the duties that our proposal assigns to various participants in the digital economy. Instead, we set out the legal and economic principles that should govern intermediaries; the technology used to implement our proposal should enable and respect these principles.

most children's advocates to caution against online age verification efforts. Protecting against such dangers also lies outside the scope of this Article.

We expect that, if our proposal gains traction, others will accept the challenge to identify and solve these and other difficult issues we can only conjure, including how to ensure the market is accessible to—and not exploitative of—people with various other hurdles to full participation, including people with developmental disabilities, incarcerated people, and service members stationed abroad.

The Article proceeds as follows. We first list our policy recommendations for the reader who wants a one-page overview. Then we introduce the basic characteristics of our proposed data intermediaries and the regulatory regime in which we propose that they operate. Next, we turn to a description of personal data and privacy levels. The next Part focuses on user behavior, followed by a detailed discussion of how the purpose of data usage fits into the regulation. We then discuss the ways in which the regulator can enhance competition and conclude with issues of enforcement and future trends.

C. Summary List of Policies

As mentioned, this Article should not be read as a blueprint. Rather, we offer what appear to be minimum policies a regulator must promulgate, enact, or enforce if the market we envision is to operate as intended. Our expectation is that these policies, if adopted and enacted, would create incentives that would encourage conduct by actors in digital markets that would bring about the outcomes we desire. The underlying laws that would be needed to create a market for data would first have to give consumers necessary control rights (or expressly acknowledge these rights as pre-existing) over their personal data, and second establish a regulator with the power to set rules in these markets. The following is a summary of those policies as they relate to intermediaries, data, and the user interface.

Intermediaries²⁴

Each data intermediary would be required by statute to act in the fiduciary interests of its users.

- Each data intermediary would also be directed to comply with data minimization principles,²⁵ balancing this goal

24 Several proposed policies governing intermediaries are intended to promote vigorous competition among them. Doing so may be especially difficult during the early years of the market when the intermediaries have zero or only a few years of results to tout. Some may turn to third parties to whom the intermediaries would pay commissions to help recruit users. We see potential benefits to the use of recruiters—who can help users understand differences between the intermediaries—but also potential downsides. The authors agree that the regulator will need to institute some sort of policy with respect to recruiters. We cannot at this time presuppose what that policy should be. The “right” policy will depend on the state of the market at the time, including the percentage of users who have committed to sign up with a data intermediary.

25 “Data minimization” is a principle articulated in, and reflected throughout, GDPR and related regulations. The principle calls on all those who control personal data “to collect only the personal data they really need, and ... keep it only for as long as they need it.”

with the goal of monetizing user data and creating datasets that are valuable to consumers and society.

- Data intermediaries would be licensed and have strict regulatory requirements in terms of data security, cybersecurity, and resilience.
- Data intermediaries would be independent and could not vertically integrate with any other business whose products or services relate to the use of personal data. They could not sign exclusive deals with any firm that provides a product or service that is reasonably necessary to the business of another intermediary.
- Each user each year would contract with just one data intermediary. That intermediary would serve as the user's exclusive agent for purposes of monetizing the user's personal data generated through the use of any of their devices or web-connected products comprising the Internet of Things (IoT). Requiring that each user have only one intermediary at any given time would enable the data intermediary to build up a good picture of the user and act as a bottleneck to that user, both of which are important for maximizing the value of the user's data and also for making the complete set of their data available for research and other beneficial uses.
- Intermediaries would compete for users by offering users a share of revenue in exchange for monetizing users' data (with a minimum set by the regulator as a percentage of revenue). The cash value of that share would depend on the intermediaries' business acumen, including its ability to attract consumers, retain them, and create value from the data those consumers choose to share.
- Intermediaries also would compete along dimensions such as commitment to data security, customer service, brand, and success in facilitating innovative data use by researchers, government agencies, and other firms that can provide services to users.

Data

- Once a user has chosen an intermediary, the chosen intermediary would collect all online data for that user by monitoring browser and app use. The intermediary could choose the level of detail at which it collects the data, which may affect the manner and rate at which it can be monetized.
- The data collected by each intermediary would reflect a balance between its obligation to adhere to principles of data minimization, on one hand, and its incentive to promote beneficial data uses and to monetize data at rates high enough to permit competitive revenue-share returns to its users.
- The intermediary would sell access to its users based on this personal data. In order to develop cohorts for targeting of display ads, it could carry out its own data analytics across the data. The use of cohorts helps to protect individual privacy.
- Intermediaries also would sell personal data to search services that wish to advertise on the basis of the personal data (search query) entered by the user.
- Web services could collect personal data they need to provide their service, if used solely for this purpose, and could choose the level of granularity at which they collect the data that is suitable for that purpose. (As an example, a search engine may collect and use personal data to provide relevant organic results, but not to target related advertising.) They could carry out data analytics across user data, so long as this is needed for that purpose. They could not share data with third parties (or provide services to third parties based on the data) unless this is required for this purpose.
- Web services must buy personal data needed for any other purpose from the intermediary. The regulator would develop rules about how far in advance of “use” the web services should be permitted to buy access to such data, and for how long the access lasts.

- Third parties that are not licensed data intermediaries could not transact in personal data except with a licensed data intermediary.
- Data intermediaries could assist users by making payments on their behalf to web services that charge a monetary payment and deducting the subscription or other fees from the total amount that otherwise would have been paid to users.

User Interface

- Intermediaries would offer consumers a choice between a small number of standardized “data sharing tiers” or “data sharing levels” that, among other things, afford different levels of remuneration.
- Users must have the ability to observe the collection and use permissions associated with each sharing tier—including their data portability choices—within a clear user-friendly interface.
- The system would encourage users to sign up to a data intermediary using nudges, defaults, and most importantly, the offer of payments. The regulator could develop additional methods to encourage participation, including public-education campaigns to dispel misinformation.
- Because data intermediaries would compete for users on the basis of payments and services, the regulator would design an environment that enables easy comparison of intermediaries, salience of terms, an open-enrollment period when offers for the coming year are made, and low switching costs.
- Intermediaries should minimize friction in switching between them, for example by including a button that effectuates a transfer of data to another intermediary. If the raw data must be downloaded, they should be downloadable to a standardized format that other intermediaries can upload easily.

- At the user's request, the intermediary would share raw data from a particular web service with third parties (e.g., a rival web service). This feature would enable data portability between web services, intensifying competition in those markets.
- Some types of data (such as health data) are so sensitive that they should not be used for targeted advertising at all, but users should still have the option, made available via the user interface, of proactively sharing such data with services.

II. The Data Intermediary Regime

A. Data Intermediaries

Data intermediaries are needed to help consumers achieve control and remuneration, and to encourage efficient and best uses of the data that are generated and collected. First, the fixed bargaining and transaction costs required for a single web user to be compensated from a particular web service would likely be large relative to the payment at issue. An organization representing many consumers, however, could distribute these fixed costs over a large client base. Secondly, web services tend to exploit behavioral biases and design choice architecture to exploit consumers. Individual consumers who attempt to make a decision each time they visit a web service would experience choice fatigue and overload, while each web service would have an incentive to create a choice architecture that induces consumers to pick the option that is most profitable for the web service.

Third, there exists a wedge between the marginal and average value of some sorts of consumer data to web services. This wedge arises because of scale economies in consumer data as used in web services' production of revenue. Some web services analyze or share data as a part of their core service; the application Waze, for example, provides information about traffic conditions based on data collected from its users. But the marginal value of data to such web services diminishes as it collects more data of the same type. In general, data collected from a group of consumers may be analyzed so that it can usefully predict the preferences of a user outside that group; in other words, there is

a data externality.²⁶ Consequently, a firm's valuation of the marginal web user's data is typically low, and the web user might not get much from bargaining with the firm even if bargaining between individual consumers and firms were feasible. This outcome would occur even if the web service's value from data averaged across web users were high. If data are "social" in this way, consumers would benefit from joining together in a group to monetize their data. An organization representing many web users would be better placed than an individual web user to both create this kind of knowledge, and then bargain over the average value of consumer data with firms.

And last, firms in online industries have sufficient market power that any attempt by users to take some surplus for themselves, either by refusing to share data, or by wanting compensation for it, can be blocked. Government intervention to create control rights for users and a system in which they could express their preferences—from sharing everything to sharing nothing—is required for any change. Those control rights include permitting licensed intermediaries to collect and monetize personal data in accordance with user permissions; reserving the right to use the internet anonymously without any collection of personal data collection; prohibiting particular uses of data as the regulator learns about possible harms; and prohibiting any firm or person other than a licensed intermediary from monetizing personal data or purporting to exercise any control over their use.²⁷

For all these reasons, the notion of an intermediary is popular among policymakers. Several different proposals from academics and think tanks have put forward different versions of intermediaries. There are startups attempting to solve this problem that have positioned themselves as intermediaries. And, most promisingly, the European Union has created a legal framework for a data intermediary.²⁸ The lack

26 See Bergemann *et al.*, *supra* note 3, at 264; Jay Pil Choi, Doh-Shin Jeon & Byung-Cheol Kim, *Privacy and Personal Data Collection with Information Externalities*, 173 J. PUB. ECON. 113, 115-116 (2019).

27 Data influence market dynamics in ways that economists are continuing to explore. For example, some data in some circumstances can facilitate competition, whereas other data in other circumstances can help enshrine market power. See Dirk Bergemann & Alessandro Bonatti, *Data, Competition and Digital Platforms* (Sep. 27, 2022) (unpublished manuscript) <https://ssrn.com/abstract=4236337> [<https://perma.cc/H6LS-VBY3>].

28 See *Proposal for a Regulation of the European Parliament and of the Council on European Data Governance*, COM (2020) 767 final (Nov. 11, 2020).

of rules around personal data has mostly been a topic of study for lawyers rather than economists, and so they rarely include a proposal to permit the user who generates the data, or the intermediaries who manage the data, to be remunerated. Of the policy proposals, only that of Eric Posner and Glen Weyl²⁹ (and the subsequent and related proposal by a nonprofit founded by Glen Weyl, RadicalxChange³⁰) are designed to give users monetary compensation for their data.

Specifically, Posner and Weyl envision “data coalitions” as introduced by the RadicalxChange foundation in their Data Freedom Act (DFA).³¹ As is the case with our data intermediaries, Posner and Weyl’s data coalitions would owe fiduciary duties to their communities of data providers (web users), and in turn, would coordinate to collectively bargain over the use of their data. Also like our data intermediaries, data coalitions would have (i) centralized bargaining power over consumer data and (ii) monetize some of their consumers’ data. In a nutshell, this proposal envisions intermediaries as collective organizations through which web users could stand in solidarity with each other to advance their common interests.

We see here are two crucial distinctions between our approach and the DFA. Firstly, the DFA envisions significant participation by data-coalition members in the governance of these data coalitions.³² By contrast, the actions of the data intermediaries in our framework require no democratic legitimation, but rather are to be launched in the same manner as other private entities, for example by incorporation or the creation of a limited partnership. The democratic processes upon which data coalitions would rely may not work well when consumers have behavioral biases and are reluctant to engage with decisions concerning their data in a substantive way. Secondly, the DFA does not impose substantial restrictions on the feasible contracts between consumers and data coalitions. Instead, these contracts would be relatively freely determined in negotiations between the data coalitions and web services. The authors of the DFA suggest that the democratic structure of

29 See POSNER & WEYL, *supra* note 9, at 246-49.

30 See RadicalxChange, *supra* note 16, at 10-18.

31 See *id.* at 5-6.

32 According to the Data Freedom Act, at least one third of the governing body of any data coalition must consist of representatives that are elected to these positions once per year. Moreover, significant collective choices require approval by a majority of the members. *Id.* at 23-24, 28.

data coalitions suffices to ensure that the terms of these contracts will be favorable for consumers. By contrast, we have pondered the consumer-optimal design of these contracts (compensation schemes, data-share tiers, and usage restrictions) in the face of possible agency problems.

There are several other more nuanced differences between the DFA and our approach. For instance, the DFA focuses on relational data and claims that this has stronger relevance and value than individual data. We do not take this stance. This is why, in this Article, we address almost exclusively the nature of transactional processes for individual data, such as auction mechanisms and definitions of data necessary to service users. Moreover, the DFA imposes different constraints on consumers' options than we do. For example, the DFA allows consumers to be a part of multiple data coalitions, while we forbid such multi-homing. In addition, the DFA states that data-coalition members can be bound to a data coalition for six months. There is no analogue to this in our Article, in part because switching is the principal way we expect consumers to express and exert pressure as to the combination of features offered by different intermediaries.

There also have been efforts by firms to compensate web users for their data, but these efforts have either taken place at a small scale or have been short-lived.³³ The Article below analyzes the issues of market design that will need to be solved for these markets to work in delivering efficient and substantial compensation to users.

A data intermediary would carry out its tasks by installing a piece of software on an enrolled user's device(s). The software would enable the intermediary to observe the user's visits and activity online and through mobile apps. The regulator would issue rules prohibiting websites, apps, and the like from engaging in practices that inhibit such observation. The intermediary would, necessarily, have tremendous access to users' private information.³⁴ We recommend that data intermediaries be

33 One example from the 1990s is NetZero, an internet service provider that offered its consumers free internet in exchange for the right to display targeted ads to these consumers as they browsed the web. NetZero no longer offers this service. See Jason K. Krause, *Last Call for Free Web Access*, CNN (Oct. 26, 1998, 1:10 PM EDT) <http://www.cnn.com/TECH/computing/9810/26/lastfree.idg/index.html> [<https://perma.cc/2TXF-C3VH>].

34 The intermediary also would gain information about one web service that would be valuable to its competitors. The regulator could guard against such indirect espionage by maintaining a data base of firms' principal competitors, which firms with such concerns could name under oath.

licensed by a regulator and adhere to the principle of data minimization. This would ensure that intermediaries satisfy any security or privacy regulations that the regulator establishes, including regulations intended to prevent intermediaries from providing personal data to one web service that is competitively sensitive to another (the gross sales figures for a particular product, for example). It also would permit the regulator to revoke the license in the event of violations by the intermediary.

We also recommend that our data intermediaries have a fiduciary responsibility to their users. This legal designation requires that an organization act in the best interests of its users. As economists, we find this tool to be helpful because no regulation can be perfectly complete or comprehensive. In any situation where the intermediary has a choice of action, a fiduciary responsibility will discourage it from making the choice that harms consumers.

Despite the potential profitability of data intermediaries and their potential benefits for consumers, data intermediation of the sort we conceptualize has not spontaneously arisen. The discussion below should make clear that new rights and incentives must be created to change the incentives of all parties involved. The complexities of delivering competition at every level to benefit consumers requires a new regulatory framework.

B. Scope of Data Covered

The European Union's GDPR defines personal data as information "related to an identified or identifiable natural person," emphasizing that their regulation covers data that allows a person's identity to be directly or indirectly inferred. Here, indirectly inferring someone's identity means inferring an identifier of the person such as their telephone number or their vehicle's license-plate number. Similarly, the California Consumer Privacy Rights Act (CCPA) of 2020 defines personal information as "information that identifies, relates to, describes, is reasonably capable of being associated with, or could reasonably be linked, directly or indirectly, with a particular consumer or household."³⁵

The kinds of data and information that GDPR and CCPA describe as personal may or may not be particularly valuable. An advertiser may

35 CAL. CIV. CODE § 1798.140(v)(1) (West 2023).

be more interested in knowing that a consumer is searching for yellow shoes in New York City even if they cannot be identified, than it is with information that would permit the advertiser to learn their name. If user-created data are valuable, users should be compensated even if those data cannot reasonably be used to infer a user's identity. Thus, we consider a broader class of data than the GDPR and the CPRA. We use the term "personal data" to refer to all data describing an individual's characteristics, transactions history, and browsing history that is generated by that individual, even if the data cannot lead an advertiser or other purchaser to the actual person who generated the data. An efficient data market would create the right incentives for sharing that data.

We talk of "consumer data" when we mean data that do not make possible any linking of any information that relates to a particular individual to that individual. Consider a dataset that maps the number of clicks a particular ad gets by the hour over the course of a day; such a dataset comprises consumer data.

We talk of "personal data" when we mean the actual Google searches conducted by users. These pieces of information are "personal data." Only "personal data" are covered by our proposed regulation and included in the market we envision. The regulator, based on experience over time, could issue rules further delineating this distinction.

An important concept going forward is the categorization of personal data that is needed to provide the service requested. An ecommerce site needs a physical address to deliver a package, a search engine needs a query in order to provide organic results, a social network needs the content in posts in order to share them with a user's friend, and a recommender system such as a music-streaming service needs data about selections, likes, and so forth to propose playlists.

By contrast, web services also use personal data to serve targeted advertising or paid promotions. The ecommerce site may design an ad based on a user's delivery address, a search engine may select ads to display based on the query submitted, a social network may choose ads based on the emotional valence of a user's posts. These sales of ads are not the direct service that the user requested, even though they may help fund it. Today, personalized advertising occurs in a setting that is unregulated and has not been designed to benefit consumers; this is the situation our regime is designed to make more efficient.

C. Monetization Function of the Data Intermediary

We have established what constitutes the personal data in our market and have introduced the intermediary that would be the agent of the consumer. How would the intermediary both safeguard and monetize the consumer's personal data? After a user chooses an intermediary and instructs it on what to share, and technical steps have been carried out, the intermediary could see all the user's online activity. The intermediary now must try to monetize the data the user wishes to share while protecting the other data.

It is important that intermediaries face incentives to enter the intermediation industry and make investments that benefit their competitive position. Investment in the industry is important because data intermediation would require the development of new technology for transmitting, pricing, and protecting data. The benefits of the intermediation regime for web users also would depend on intermediaries' success in negotiating with web services over the surplus generated by users' data; intermediaries would earn the revenue from their users' data and would therefore be incentivized to negotiate effectively with web services. We discuss payments to users below.

The intermediaries' monetization of personal data would mostly relate to digital advertising. In the bargaining between intermediaries and web services selling advertising, it is important to understand the outside option for both sides. The system is set up so that users single home; they would enroll with one intermediary and therefore advertisers would face a monopoly seller of that user's data. If the advertiser does not contract with the intermediary, it could not target ads using personal data to that intermediary's users.

We begin with a discussion of search advertising. If an individual searches for "white running shoes," this is a piece of personal data. The control rights established by the rules would allow "first parties" to utilize the data they collect via their own web service in order to provide that service. As such, Google could use such data in a search query to return organic search results and to train its algorithm. However, under the proposed rules, Google could not use this consumer data to serve advertising to the user because that is not the core service requested by the user, but rather a way of monetizing that service.

To use the personal data "individual X is searching for white running shoes" to advertise to that consumer, Google would be required to

purchase that data from the user's data intermediary. In general, the data intermediary would not sell access to raw personal data except when it benefited the user to do so. The specific information contained in personal search queries are what lead to high prices for search advertising. The intermediary would determine that the information is in a category that a user wishes to share, establish a price through some mechanism, and collect the funds from the web service. If Google and the intermediary cannot agree on a price for the user's search query, Google could serve ads that do not require individual data—such as an ad for Insomnia Cookies if it is 2am. In that instance the intermediary would not collect any revenue from Google for the data.

The intermediary would also be able to monetize the user's possible purchase intent (individual X is searching for white running shoes) to web services more widely. Google may be well-positioned to serve an advertisement, since the user is currently on its site, but other search services—whether a search engine or an ecommerce site or other location—may also wish to purchase such data. This may be helpful in promoting much-needed competition in the search advertising market. However, such web services could not retain the personal data query for future use.

A query that is necessary to carry out the service desired by the consumer would not require the web service to purchase the personal query data. For example, consumers on an ecommerce site who search for “white running shoes” expect to be shown products that match that description so they can purchase one. The ecommerce platform's algorithm that determines which items a user sees at the top of the results may be based on personal data from many consumers' searches and purchases. We discuss the rules that would apply to data used for product improvement and analytics below.

Display advertising works differently. In the current system, a supply side platform (SSP) may sell display advertising on behalf of publishers by purchasing personal data on users from an intermediary to help it determine what ad to serve in any given slot. Advertisers who wish to advertise to certain types of users would—likely through an SSP³⁶—query the intermediary to determine which users qualify.

36 A Supply Side Platform (SSP) assists publishers who supply the space on screens where users might view advertisements. SSP's offer these “opportunities”—which generally include information about the type of ad space offered (banner ad, pop up ad,

The answer would determine whether or not the user falls in the category the advertiser wants, in which case they would see the ad. If the intermediary and the SSP cannot agree on the price of the data, the SSP could turn to a rival intermediary and seek data from its cohorts of (different) users. Again, however, because users single-home, an intermediary would be the monopoly seller of its own users and would have significant bargaining power. At all times the publisher could choose to sell a contextual ad,³⁷ rather than a targeted ad, and not use any personal data.

Under our regime, intermediaries would be responsible for developing, contracting, or partnering to participate in programmatic ad auctions. An intermediary could choose, for instance, to group its clients into cohorts based on interests, demographics, or locations (e.g., young male bicyclists in the U.S. Northeast) and accept bids that condition on cohort membership. Firms that specialize in designing profitable cohorts or effective algorithms could partner with intermediaries. Additionally, the structure of advertising auctions in which the publisher pays for data as outlined in the preceding paragraph is one of many possible auction structures that intermediaries could facilitate. It would also be possible for an intermediary to provide data to advertisers that seek to bid in an auction; in this case, it would be possible for the advertiser's payment for data to be conditional on winning the auction. What matters is that all uses of the web user's data would be authorized by that user's intermediary.

There are also many imaginable structures for the publisher's payment. One possible structure would involve the publisher paying a commission to the intermediary that is proportional to its revenue from the auction. Another would feature a flat fee for the data to which the intermediary provides access at the outset of the auction. Rather than enforce a particular structure, we leave it to intermediaries and

dimensions & pixel requirements, etc.) and about the "eyeballs" that could see it (male in his 20s within 100 feet of a donut shop at 8:30 AM)—for auction through an ad exchange.

37 A contextual ad is one for which the placement decision depends exclusively on the media "context" in which it is placed—e.g., midway through the second screen of an article about the U.S. Open in the April issue of *Golf Magazine* at a particular time on a particular date—and not on any data about the person behind the eyeballs that might see the ad. Search advertising is not "contextual," because it necessarily is responsive to search queries, which are personal data.

publishers to bilaterally settle on payment schemes. It is possible, for instance, that the intermediary and the publisher could agree to trade access to the intermediary's clients' data for a reduced price for client access to the publisher's content. Intermediaries could differentiate along any of these dimensions.

One of the primary functions of our intermediaries is to consolidate the sources of data that can be queried by firms serving various functions in the delivery of targeted ads, and then pass on the gains from this coordination to web users. As documented by Gentzkow, Shapiro, Yang, and Yurukoglu, advertising channels whose viewers are difficult to reach through a particular medium (e.g., television or the internet) fetch higher ad prices.³⁸ Young men, for example, watch relatively little television, and much of their television watching is concentrated on sports channels; they single home on these channels. As a result, these sports channels command high ad prices because they offer access to an audience that is difficult to reach anywhere else. Given that our intermediaries would have rich data on their users, they would be able to identify users who single home and on which web services. This information would facilitate the sale of ad impressions at high prices. Additionally, a data intermediary would have exclusive control over targeted advertising to a particular web user because users would single home at intermediaries. The theoretical and empirical findings highlighted by Gentzkow and his coauthors suggest that our intermediary system would generate higher ad prices for intermediaries, most of which would be passed back to web users via competition between intermediaries.³⁹

Intermediaries would serve a similar "consolidation" role for firms that want to examine personal data, or some version of that data, for market research or product development purposes. Some such uses would be efficient and consistent with users' best interests, even though the users may have no relationship with the inquiring firms and may even constitute the target market for a product or service being developed. Intermediaries would evaluate such opportunities through

38 Matthew Gentzkow, Jesse M. Shapiro, Frank Yang & Ali Yurukoglu, *Pricing Power in Advertising Markets: Theory and Evidence 2-3* (Nat'l Bureau of Econ. Rsch., Working Paper No. 30278, 2022), <https://www.nber.org/papers/w30278> [<https://perma.cc/Q9XD-3UZF>].

39 *Id.*

the lens of their fiduciary duties to users and may monetize some or all such opportunities. For example, an entrepreneur might wish to purchase data on food purchases to help design an emerging food delivery service. Intermediaries also would consider providing access to personal information for various prosocial purposes, such as medical research, research on the impacts of technology, or public purposes such as evaluating bus routes and schedules. Because each intermediary presumably would represent millions of users, their ability to facilitate arrangements for access to large data sets would open opportunities for innovation, to be balanced as always against the users' best interests.

D. Standardized “Data-Share” Levels

The value of a user's personal data would depend on what sort of data they are willing to share. Data could be arrayed from least valuable to most valuable from the perspective of an advertiser. Likewise, data could be arrayed from least costly to share in terms of privacy and intrusiveness to most costly. A market mechanism would help users choose to share the data that is worth more to advertisers than it is to them. Because users visit many web services in a day, each of which may have different interests and a different business model, the process of determining what is efficient to share would be complex.

A major problem a consumer faces when trying to control the collection and use of their data in the status quo is that user agreements are impenetrable. They are long, contain legal concepts and jargon, and are not realistically understandable by regular users with finite time. Furthermore, spending the time and effort to understand the terms delays the use of the service, which is the user's immediate goal, so they have an incentive to skip over the task. Web services therefore design these terms of service to be ignored by consumers, which means they can contain terms that advantage the web service and harm the consumer.

Any data market that wishes to give users control over the use of their personal data must develop a system that recognizes and accommodates real-world user behavior. In our proposal a regulator would establish a standardized menu of data-share levels. The standardization of levels would allow the regulator to design descriptions that consumers can understand, does not require consumers to learn new terminology or concepts when they change web services, and removes a web service's

ability to tailor data sharing descriptions so they are confusing. The idea of standardized tiers is not new; they are found, for example, in the Affordable Care Act's standardization of tiers (e.g., "Bronze," "Silver," etc.) for health insurance policies. A regulator would require that data intermediaries offer these tiers to their clients. The regulator would design the tiers to represent average user views on what constitutes decreasing levels of privacy. Users would then choose how much data to share in a standardized environment designed by a regulator to be understandable and clear.

Each data-share level would be a distinct collection of types of data a consumer would allow the intermediary to monetize. Web services would be able to contract to use these data as we describe below. Web services would not be permitted to use any data outside the categories selected by the consumer. Of course, as noted above, a web service could retain and use personal data that are essential for performing its core functions as requested by a user regardless of what tier those data fall in or the user's choice of data tier. Thus, the data-share levels would control the sorts of data that the data intermediary may make available to facilitate the personalization of advertisements and product and content recommendations (other than those recommendations made as a part of the service requested by the user). We expect that a small percentage of such transactions would be with the web service that collected the data directly (first-party requests) and that the bulk of transactions would be with web services such as advertisers or publishers for use in crafting offers and bids for ad impressions (third-party requests). We elaborate on the distinctions between uses of data later in the Article.

The first tier of data sharing we define (tier 1) includes basic demographics, which includes information on age, gender, location of residence at the ZIP code level (or some other geographical unit of similar size), and other personal characteristics that are not considered sensitive (see the discussion below). Tier 1 also includes the applications installed on a user's device, which are similarly indicative of the user's personal characteristics (e.g., an application for hockey news indicates that the user is a hockey fan, whereas general news applications indicate an interest in current affairs).

Tier 2 includes browsing and app-usage data, which refers to all data generated by the user's activities on web sites and applications that interface with the internet. Browsing history is especially valuable for two reasons: it reveals purchase intent, and it facilitates "frequency

capping”—that is, the ability to limit the number of times a user sees a particular advertisement. A user’s browsing data often reveals purchase intent, which allows advertisers to send ads to the people who want them. In addition, browsing data include information on whether a web user has been served a particular advertisement in the past. This information is highly valuable because advertisers’ valuations of ad impressions depend on how often web users have been served their ads before, and possibly how often the web user has been served the ads of rivals. Purchases are excluded for reasons described below.

Tier 3 includes the approximate real-time location of a user. Extremely precise locations, such as which floor of a particular building a user is on may be unduly intrusive. However, an approximate real-time location generates value to advertisers in the local area. For example, a shoe store or pizza restaurant in New Haven, Connecticut might be willing to pay for users within a few miles but would be unwilling to advertise to a person in California.

The final category of data sharing (Tier 4) allows the intermediary to attribute purchases to advertisements or other content that a web user has seen online. These data include the consumer’s financial records, data on online transactions, and the user’s email receipts and other electronic transaction confirmations. While financial records are sensitive, our justification for including this category is that attribution is highly valued in digital advertising, and thus it would likely to be lucrative for a consumer to share the data that will allow purchases to be attributed to online content. Because financial data must be kept secure, the methods for tracking attribution would need to be developed by intermediaries and the regulator, according to consumer preferences and the value of the data. An intermediary, for instance, could offer web users the ability to link their credit card accounts with their intermediary accounts and, in doing so, authorize the intermediary to search for attribution data and monetize it on behalf of these users.

Last, we create a Tier 0 for consumers who wish to remain anonymous. An anonymity option has several benefits. First, society may want to establish a right for a consumer to anonymously access the web, so a market design should accommodate that. Second, web services would need to develop a plan for supporting this level of data sharing. Web services would be able to show contextual advertising to this potentially large group of anonymous users, but not personalized ads.

Those contextual ads may support the web service, or the service may want to offer a lower quality version to Level 0 users. A Level 0 option would be important in the negotiation between the web service and the intermediary because it would be the outside option if negotiations over the price to pay for data were unsuccessful.

In summary, our proposed data-share levels are:

Level 0: This level features zero data monetization. The intermediary does not pass on or monetize any data to web services for purposes other than servicing users. The data intermediary's role is only to provide first-party information to web services that is necessary for web services to carry out the core functions that the intermediary's users have requested them to perform.

Level 1: The intermediary is additionally permitted to monetize the user's basic demographic information and the set of applications installed on the user's devices to web services.

Level 2: The intermediary is additionally permitted to monetize the user's browsing and app-usage data and data that personally identify the user.

Level 3: The intermediary is additionally permitted to monetize the user's approximate real-time location.

Level 4: The intermediary is additionally permitted to monetize data that facilitate attribution of the user's purchases to digital advertising and the display of other online content.

We offer these definitions in the spirit of providing an example of how a market for data could work, rather than as the final word on either the number of levels or the content of each level. We are not experts in consumers' actual relative preferences and discomfort with the various types of data collections and uses, so these proposed tiers reflect our best effort to create tiers of increasing "invasiveness" and "prospects for monetization." Experts in the design of these levels could modify them based on new learning. And as new functionalities and business models develop, a regulator might want to alter the levels to accommodate new ways of creating value. The regulator could even design tiers as

defaults, with further personalization allowed within each tier. However, because the use of data is confusing to consumers and web services' current data policies are impenetrable, there is great value in simplifying the consumer's choice by limiting the number of levels and standardizing them.

Indeed, under our system, an intermediary might even decide not to offer Tier 4 services, for example, on account of a philosophical opposition to the collection or use of data that can be linked to an actual human. That intermediary would make available cohort-level data available to SSPs and advertisers but would not provide access to data that would permit attribution (and could not provide the data because it would not collect them in the first instance). That decision could provide an advantage—users who admire the principled decision might flock to the intermediary—or a disadvantage—the intermediary would not participate in some of the most lucrative arrangements involving personal data. The decision might or might not be sustainable.

A system of levels would be consistent with privacy laws that might ban the collection and use of certain data or establish certain consumer rights or protections (e.g., a ban on targeting cigarette or vaping ads to people who are trying to quit smoking). Indeed, we are in favor of a regulator carefully considering whether there are categories of data to exclude from markets altogether because the chance of harm to consumers is too high. The regulator should be able to protect consumers from exploitation by prohibiting the intermediary from gathering or sharing these data. Categories of data that society might wish to exclude from data markets include: data that reveal political party affiliation, trade union affiliation, sexual orientation and sexual history, religious belief, addictions, and other characteristics that historically have served as the basis for discrimination or disfavored treatment. These characteristics are similar to the categories of sensitive data under the GDPR and the CPRA.⁴⁰ Relatedly, the regulator might

40 See *What Personal Data is Considered Sensitive*, Eur. Comm'n, https://ec.europa.eu/info/law/law-topic/data-protection/reform/rules-business-and-organisations/legal-grounds-processing-data/sensitive-data/what-personal-data-considered-sensitive_en [<https://perma.cc/Z3QD-PYCN>] (listing categories of sensitive data under the GDPR); Cal. Civ. Code § 1798.140(v)(1) (West 2023) (listing categories of sensitive data under the CPRA); Katelyn Ringrose, *New Categories, New Rights; The CPRA's Opt-out Provision for Sensitive Data*, iapp (Feb. 8, 2021) <https://iapp.org/news/a/new-categories-new-rights-the-cpras-opt-out-provision-for-sensitive-data> [<https://perma.cc/4Z64-77TP>] (comparing the protection of sensitive data under the GDPR and CPRA). Note that the

wish to exclude categories of firms (e.g., online gambling firms) or firms in violation of certain laws or standards such as trade policies or economic sanctions issued by the home country of the regulator.⁴¹

The rules would also provide “allowances” of a certain number of hours during which a consumer could browse anonymously, regardless of which data sharing level they have selected. In that case the consumer’s data intermediary would not transmit any of the consumer’s data to any web service, and there would be no collection of the consumer’s data by any data intermediary. This feature would allow web users who have chosen to monetize their data to keep certain web activities private. This could be desirable, for instance, for someone diagnosed with a medical condition who seeks to conduct online research about the condition, but who does not want any web service to collect data related to this diagnosis.

E. Combining Data and Dollars

Our proposed regulation would require each data intermediary to transparently state the amount of compensation that it offers to any consumer that chooses a given privacy level in calendar year. They would choose these prices at the start of an “open-enrollment period” when consumers would choose an intermediary for the coming year.

One challenge in designing the market for data intermediaries lies in choosing how intermediaries may set their compensation schedules. The scheme must be incentive compatible, promote competition, and be understandable to consumers. We propose a system in which each intermediary would provide the same base level of compensation to

CPRA considers the contents of a users’ messages to be sensitive information.

41 Regulators may also want to restrict the ability of intermediaries to sell data that facilitate targeting consumers based on their vulnerabilities—for example, because they are in financial distress, struggle with addiction, or are “financially unsavvy.” See Jon Keegan & Joel Eastwood, *From “Heavy Purchasers” of Pregnancy Tests to the Depression-Prone: We Found 650,000 Ways Advertisers Label You*, THE MARKUP (June 8, 2023), <https://themarkup.org/privacy/2023/06/08/from-heavy-purchasers-of-pregnancy-tests-to-the-depression-prone-we-found-650000-ways-advertisers-label-you> [<https://perma.cc/U7DD-MFN3>] (explaining how advertisers use personal data to segment consumers into groups with the same or similar undesirable characteristics and vulnerabilities). For an economic analysis of the welfare consequences of “steering” fallible consumers to products based on errors these consumers make in evaluating offers, see Paul Heidhues, Mats Köster, & Botond Köszegi, *Steering Fallible Consumers*, 133 THE ECON. J. 1430 (2023) (concluding the welfare effects of “steering” based on good information about consumer errors are likely significantly negative).

every consumer within a particular data-share level, subject to some adjustments as explained in the following paragraphs. Flat rates would let the intermediary make different payments to web users who choose different data-share levels; they would also allow compensation to vary across intermediaries within a particular tier.

Because the value of users' data and their activity is uncertain, an intermediary might want to guarantee a certain monthly payment and once the year is over, top up each user proportionately with a bonus that depends on total revenue. An intermediary could offer a payout of $Y\%$ of revenue or $\$X$ per month, whichever was larger. The $\$X$ per month would be guaranteed and would therefore be the price displayed on the choice screen. However, intermediaries might develop reputations for good performance and positive bonuses.

Another possible compensation system would involve intermediaries paying each web user a share of the revenue that this web user's data generates. Such compensation schemes would lower risk but generate several problems. First, determining the exact value of any individual user's data would likely be challenging given the presence of complementarities between the data of different users, for example, in analytics. Additionally, this system could induce moral hazard. Moral hazard, in this setting, refers to the possibility that web users could increase the revenue that their data generates, and thus their compensation, by adjusting their browsing patterns. As an example, the consumer may browse websites that they are not interested in because providing data to these sites earns them a higher payment from the intermediary. Although it is possible that data intermediaries would be able to develop methods that detect, discourage, and eliminate devious web use, it seems simpler to choose compensation schemes that do not generate any moral hazard.

An exception to our stipulation of constant remuneration for web users belonging to the same privacy level and intermediary is that users who spend different shares of browsing time in anonymous mode would receive different levels of remuneration. Recall that we would allow web users of any share level to use the internet anonymously—that is, to use the internet without passive data collection or personalization. A web user could select a share level allowing for a great extent of data monetization (e.g., Level 4) and always browse anonymously, which would prevent the user's data from being monetized. Such behavior

would undermine the value of share levels that allow for substantial data sharing for users who seek to monetize their data. Therefore, we propose allowing intermediaries to mark down web users' compensation by the fraction of time that they spend in anonymous mode. A Level 4 web user who spends half of their time in anonymous mode, for instance, would receive half of the advertised payment for Level 4 under this system. Such a policy would have no practical consequence for users who only occasionally browse anonymously.

There are significant uncertainties inherent in starting up a whole new market, and firms may either lose or profit more than they forecast until an equilibrium is achieved. To forestall excess profits, we suggest the regulator apply a loss ratio rule familiar from the health insurance context. Such a requirement would require intermediaries to pay out a minimum level of revenues to users (e.g., 70%) by tier. At the end of the year, the intermediary would assess its revenues and payments and, if needed, increase payments to its clients to meet the threshold. This type of rule would ensure that web users are remunerated for their data as the regulator fine tunes market design.

Intermediaries or the regulator may want to design details of this compensation system to increase web users' enthusiasm about data intermediation. The regulator could set a common schedule for the payment of annual lump sums or bonuses to occur on December 1 for example, which would help consumers yearning for liquidity around the holidays and increase the salience of the payment. Intermediaries would be free to design a combination of monthly and end-of-year components. The regulator could also allow intermediaries to offer payments to consumers in the form of credits for certain products (e.g., the mobile phone bill). Intermediaries could also form around causes and contribute their profits to that cause, rather than to consumers. However, every intermediary would be required to state a clear expected annual dollar amount for each privacy tier.

Irrespective of the chosen regulations for intermediaries' compensation schemes, competition between intermediaries is desirable in that it will help ensure that the surplus generated from web users' data is largely returned to web users.

We conclude this Section by raising a tricky economic issue: web users who choose Level 0 would fail to generate revenue for their data intermediaries but would create costs (e.g., for managing the data that

web services use for servicing their users). Thus, data intermediaries that do not receive other revenue from Level 0 users would face an incentive to discourage users from selecting Level 0—for example, by offering a poor quality of service to these users. To address this perverse incentive, we propose allowing data intermediaries to charge fee to users selecting Level 0. Such a fee is akin to charging web users a positive price (rather than compensating, i.e., charging a negative price). Any such fee would also need to be transparently displayed at the time of annual enrollment.⁴²

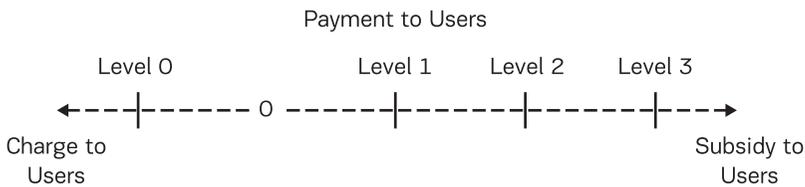


Figure 2. Payment Scheme: Illustration

The optimal level of quality of a web service might be sustainable with contextual advertising, it might require the higher level of revenue generated by targeted advertising, or it might be sufficiently

42 It may seem incongruous that Level 0 users may have to pay a fee to their intermediaries, given that the control right we propose includes the right to decline any collection or use of personal data. Deeming something a “right,” however, doesn’t imply that exercising that right must be free in all instances. Citizens in most countries may have the right to drive a car on public roads after passing a test, but they nonetheless might have to pay a fee to obtain the license that confirms the right. Persons charged with serious crimes have a right to counsel; but if counsel is appointed, counsel fees may be assessed as court costs upon conviction. See Matthew Menendez, Lauren-Brooke Eisen, Noah Atchison & Michael Crowley, *The Steep Costs of Criminal Fees and Fines*, BRENNAN CTR. FOR JUST. (Nov. 21, 2019), <https://www.brennancenter.org/our-work/research-reports/steep-costs-criminal-justice-fees-and-fines> [<https://perma.cc/VTV6-Z6ED>] (noting that court fees “cover almost every part of the criminal justice process and can include court-appointed attorney fees”). It also is possible that Level 0 consumers would not have to pay a fee. People who select this level are likely to be wealthier than the average user, in that their selection indicates they have sufficient economic freedom to choose anonymity over payment. Intermediaries would want to attract such users with the hope of “upselling” them in future years into levels that permit more sharing of their relatively high value data, which the intermediary would hope to be able to monetize at higher-than-average rates. Intermediaries could offer a “no-fee” introductory rate, for example, which itself would spur competition among the intermediaries.

expensive (or have consumers who are not valuable) that it requires another revenue source like a subscription to cover its costs. In general, one should think about the net cost of web services under a targeted advertising regime as ranging from positive to negative. Services that can earn more than their costs through advertising are on the positive side, while those that require a cash payment to run are on the negative side.

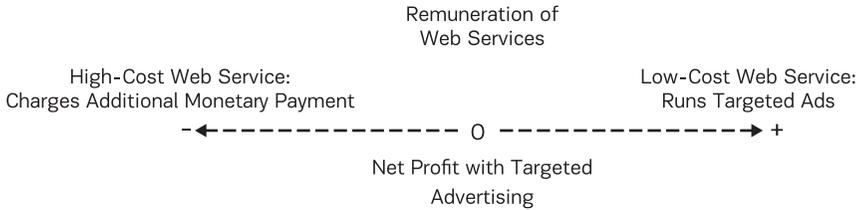


Figure 3. Categories of Web Content: Illustration

A user may want to access both types of content, and the data intermediary should facilitate that. The proposal thus far has discussed the business on the right, the positive side, because these businesses generate a surplus under targeted advertising and can share it with users. However, if a user is building up funds with the intermediary due to sharing their personal data, there is no reason that the user could not ask the intermediary to spend some of those funds to allow them to access websites that charge subscriptions. An intermediary could negotiate a price schedule with web services like newspapers. Because the intermediary would reduce transaction costs, users would not need to sign up for expensive annual subscriptions but would be able to pay \$.10 to read an article in a newspaper. We call this a “microsubscription.”

The microsubscription price would be negotiated by the intermediary and then discounted according to the data tier of the user—because the data barter the user has chosen offsets the monetary cost. The intermediary would signal to users that they have arrived at a web service that costs money and tell them the net price. The user could then decide to go ahead or not. In this way consumers would be offered choices to pay with money when there is expensive content available that cannot be bartered for. The price schedule available to users and the range of content covered by an intermediary would be one of the dimensions over which the intermediary bargains. As noted above, to prevent exploitation of Level 0 users, web services that offer content in

exchange for personal data only would also provide a version of their service that is available without monetary or data charge.

The possibility of incorporating microsubscriptions might also solve some of the business challenges created by Level o users. These users do not want to barter for services with their data. Therefore, they would need to pay more in money. The regulator might want to permit intermediaries to charge a transaction fee (e.g., 5%) for payments made by Level o users. If this were clearly stated on the choice screen, intermediaries would compete on this dimension. But intermediaries would have a way to earn profit from Level o users and would not avoid serving them.

F. Competition among Data Intermediaries for Consumers

Data intermediaries would compete for consumers on a number of dimensions. First and most obviously, consumers would be attracted by the level of remuneration offered by the intermediary. Higher payments (or payments in attractive forms) would attract more users, who would generate revenues and economies of scale. If a consumer plans to choose Level o data sharing, for which we expect intermediaries will charge a fee, lower *fees* will attract users to intermediaries in the same way that higher or better forms of *payments* would attract users who choose to share more personal data. Intermediaries might even offer an introductory rate of zero fees for Level o for the first year, if the user remains with the intermediary for the following year.⁴³

Consumers would also choose intermediaries based on the quality of service and the user interface. For example, data intermediaries would likely provide identity and log-in services to their users as these are very convenient services. In the status quo, large digital platforms including Google and Facebook allow their users to log into third-party web services using their platform credentials, which allows those platforms to track users. Our data intermediaries could offer their own log-in services to facilitate the sharing of data for servicing users and protect it. To provide an example, the intermediary could share the web user's

43 We assume that competition will generate consumer benefits along dimensions including price and innovation because, as antitrust economists, we know this to be the case. This is precisely why we do not recommend a single, government-operated or government-controlled entity to act as intermediary: it would not face the competitive forces that generate the same consumer benefits as competition will, and so consumers would be worse off.

shipping address, credit card information, and language preferences with ecommerce sites at which the web user places orders. Thus, data intermediaries would replace the status quo regime in which web users either need to create distinct profiles at many web sites, providing each with a copy of the user's data, or provide their data to a large platform that may use the web user's data for other purposes.

Consumers might also want to join an intermediary that is differentiated in some way, for instance its payments support a cause the consumer values. Or perhaps the intermediary would enter high-profile partnerships with research institutes that rely on personal data to design solutions to any number of social or health-related problems—for example, to increase voter participation in local elections, combat climate change, and so forth.

Intermediaries might engage in marketing to inform consumers about their attributes and benefits. A regulator would need to mandate transparency to aid competition. For example, a regulator could require data intermediaries to provide a data dashboard that clearly communicates to web users how their data have been used online. Although we propose that the regulator mandate intermediaries to report certain types of information on their data dashboards—namely, which data have been shared, with whom the data have been shared, and the level of compensation that the user has received as a consequence of data sharing—intermediaries should be encouraged to innovate in designing their dashboards.

The higher the per-person revenue of the intermediary, the larger the remuneration it could offer. Intermediaries would therefore compete on the basis of innovation in monetizing user data. This might occur through creation of more effective cohorts for display advertising, or better algorithms to evaluate consumer data. To the extent the intermediary can extract more value from consumer data, it can raise the amount of remuneration it offers and gain market share and profit. Intermediaries would also have an incentive to invest in contracting and negotiation with web services as this would increase their revenue.

We are concerned that web services might discriminate against users selecting restrictive privacy levels. Under our regulatory regime, web services would be capable of inferring web users' privacy levels by sending data intermediaries queries whose results depend on the web users' selected privacy levels. If those users are lower value, web services

might have an incentive to charge higher prices or offer lower service quality to users who select these levels. In a competitive market, data intermediaries would be able to address the problem outlined above by negotiating with web services to provide their clients with quality service at a reasonable price. Data intermediaries would have an incentive to ensure all their clients have positive experiences using the internet as long as they profit from serving a client irrespective of the client's type. When data intermediaries are free to charge fees, or positive prices, to Level 0 clients, we expect this to be the case.

A data intermediary would interact with any web service used by one of the intermediary's users that requests access to personal data. Similarly, a web service that seeks to use personal data for each of its users would have to interact with each intermediary used by that group. One of the dimensions on which intermediaries would compete is their ability to design efficient contracts and negotiate with web services. Larger web services would likely want unique bilaterally negotiated contracts with intermediaries. Small web services would likely choose from a menu of standardized contracts specifying payment rates and other terms. (This pattern resembles the contracting system in the food delivery industry; under this system, delivery platforms offer restaurants contracts specifying levels of promotion and commission rates.⁴⁴)

In order to understand the parties' bargaining positions and the extent to which contracts would favor intermediaries versus web services, we need to specify the services available to users in the case in which the parties fail to reach an agreement to sell personal data. It is critical that users who choose not to share any personal data, or users belonging to intermediaries that do not have a contract with a web service, could still access the site. A system where those users were shut out of the internet would give undue bargaining power to the web service. In order to ensure that the web remains widely accessible to web users without personal data to sell, the rules must require that any web service that offers a version of its service at a zero cash price must make that or a similar version of its service also available to users who have selected Tier 0 (and therefore have declined to sell access to their data) and to users whose intermediary has failed to reach an agreement with that web service (and therefore, despite their presumed

44 See *Grow Online Sales with Doordash*, DOORDASH (2022), <https://get.doordash.com/en-us/products/marketplace> [<https://perma.cc/WT4E-Z4QF>].

willingness to sell access to their data, can't effectuate such a trade until an agreement is reached). Such services could still require users to provide personal data necessary to provide the service the user requests. An online store, for example, could require users in Tier 0 and users whose intermediaries have no agreement with the online shop to provide an address for delivery of the items the user purchases without running afoul if this rule.

III. The User Interface

This Part discusses how the user-facing aspects of the data intermediary regime can be designed to promote our proposal's goals. Behavioral economics literature suggests various reasons why the current regime based on informed consent for data sharing is unlikely to be exercised in a fruitful manner by consumers. We emphasize in particular the desirability of a clear and simple choice architecture in light of web users' attention costs and behavioral biases.

A. Choice Architecture

Behavioral economics emphasizes the role of choice architecture—that is, the way alternatives are presented as opposed to intrinsic characteristics of the alternatives—in consumer decision-making. Default options, for instance, are important drivers of consumer choice even when it is not costly to switch from defaults.⁴⁵ The visual presentation of information about choices also matters. Today, important information about the use of consumer data is concealed in visually unappealing terms and conditions notices.⁴⁶ The psychological literature on decision fatigue (alternatively called *ego depletion*) also suggests that

45 See Eric J. Johnson, Suzanne B. Shu, Benedict G. C. Dellaert, Craig Fox, Daniel G. Goldstein, Gerald Häubl, Richard P. Larrick, John W. Payne, Ellen Peters, David Schkade, Brian Wansink & Elke U. Weber, *Beyond Nudges: Tools of a Choice Architecture*, 23 MKTG LETTERS 487, 488-93 (2012) (citing numerous studies in behavioral economics and psychology providing evidence on the role of choice architecture—including defaults—in consumer decision making).

46 See Arunesh Mathur, Gunes Acar, Michael J. Friedman, Elena Lucherini, Jonathan Mayer, Marshini Chetty & Arvind Narayanan, *Dark Patterns at Scale: Findings from a Crawl of 11K Shopping Websites*, PROC. ACM ON HUM.-COMPUT. INTERACTION, Nov. 2019, art. 81, at 81:2. (providing evidence of the use of dark patterns by commercial websites to influence users into disclosing information. The authors define dark patterns as “user interface design choices that benefit an online service by coercing, steering, or deceiving users into making unintended and potentially harmful decisions”).

a consumer's decision-making ability worsens as the consumer makes more successive decisions; thus, we would expect that the abundance of data-use choices, each specific to a particular web service, leads to suboptimal consumer choices.⁴⁷ Regulation of digital markets should take these behavioral aspects of decision-making into account by establishing defaults that are in line with consumer preferences, ensuring that important information about alternatives is salient wherever consumers make decisions about their data, and limiting the number of separate choices required of consumers.

Furthermore, behavioral Industrial Organization literature points out that profit-maximizing firms have an incentive to find that decision-frame in which consumers are most likely to make the decision the firm prefers.⁴⁸ For example, if consumers tend to understand most ways of presenting the choice correctly but, due to naivete, misunderstand

47 See Roy F. Baumeister, Ellen Bratslavsky, Mark Muraven & Dianne M. Tice, *Ego depletion: Is the active self a limited resource?*, 74J. PERSONALITY & SOC. PSYCH. 1252, 1253 (1998) (defining ego depletion as “temporary reduction in the self’s capacity or willingness to engage in volitional action ... caused by prior exercise of volition,” and providing experimental evidence for this phenomenon). There is also considerable evidence of ego depletion in behavioral economics. See, e.g., David Hirschleifer, Yaron Levi, Ben Lourie & Siew Hong Teoh, *Decision Fatigue and Heuristic Analyst Forecasts*, 133 J. FIN. ECON. 83 (2019) (finding that the accuracy of financial analysts’ forecasts decreases as the number of previous forecasts made in the same day increases); Emil Persson, Kinga Barraferm, Andreas Meunier & Gustav Tinghög, *The Effect of Decision Fatigue on Surgeons’ Clinical Decision Making*, 28 HEALTH ECON. 1194 (2019) (finding that surgeons are less likely to schedule a patient for an operation late in their shifts); Ned Augenblick & Scott Nicholson, *Ballot Position, Choice Fatigue, and Voter Behaviour*, 83 REV. ECON. STUD. 460 (2016) (finding evidence of decision fatigue in voting by exploiting variation in choices’ positions on ballots caused by differences in the number of local ballot measures).

48 See, e.g., Tom Blake, Sarah Moshary, Kane Sweeney & Steve Tadelis, *Price Salience and Product Choice*, 40 Mktg Sci. 619, 625 (2021) (presenting evidence suggesting online vendors have an incentive to display mandatory fees at the end of the purchasing process because consumers are less responsive to fees displayed at this stage than fees prominently displayed at the outset of the purchasing process); see also Jennifer Brown, Tanjim Hossain & John Morgan, *Shrouded Attributes and Information Suppression: Evidence from the Field*, 125 Q. J. Econ. 859, 870-71 (2010) (noting that sellers can increase overall profits by lowering their advertised prices while adding shipping fees and/or other add-on fees); Liran Einav, Theresa Kuchler, Jonathan Levin & Neel Sundaresan, *Assessing Sale Strategies in Online Markets Using Matched Listings*, 7 Am. Econ. J.: Microecon. 215, 239-41 (May 2015) (suggesting that consumers do not rationally internalize shipping fees into products’ overall prices when making purchasing decisions, and that sellers can exploit these biases by lowering their advertised prices while adding shipping fees and/or other add-on fees).

one framing thereof, this will eventually drive firms to select the frame consumers misunderstand. By regulating the frame—the data-share levels and how they are presented—we circumvent this problem.

Although we emphasize the role of behavioral biases, it is worth noting that even a consumer without these biases is likely to be overwhelmed: the real costs of learning about terms of service and switching costs are high. Reading through lengthy terms of service agreements requires users' time and effort and may also require legal training to understand. These costs discourage web users from attempting to make good decisions about their data. By obfuscating terms of service agreements, a web service can induce consumers to consent to provisions that they would otherwise oppose. Web services may further change their terms in unfavorable ways after users are locked in. Because these tactics make it infeasible for most consumers to forecast the sorts of data they are sharing and the value of these data, these consumers cannot effectively make choices, let alone negotiate with web services, over the value of their data.⁴⁹

Web users are unlikely to understand the technical language that technologists or privacy experts may use to describe the privacy levels we introduced in the previous Part. Inconsistency across intermediaries in the language used to describe these concepts could further confuse consumers. Data intermediaries must accommodate limited consumer literacy and actively reduce obstacles to consumer comprehension of the privacy levels. The most vulnerable consumers may have the most difficulty understanding the tradeoffs involved in their choices. It is therefore imperative to ensure that the privacy levels are described and framed in a way that is intelligible to the population at large.

49 This concern appears in California's Consumer Privacy Rights Act of 2020, which states:

"In practice, consumers are often entering into a form of contractual arrangement in which, while they do not pay money for a good or service, they exchange access to that good or service in return for access to their attention or access to their personal information. Because the value of the personal information they are exchanging for the good or service is often opaque, depending on the practices of the business, consumers often have no good way to value the transaction. In addition, the terms of agreement or policies in which the arrangements are spelled out, are often complex and unclear, and as a result, most consumers never have the time to read or understand them... . This asymmetry of information makes it difficult for consumers to understand what they are exchanging and therefore to negotiate effectively with businesses."

California Privacy Rights Act of 2020, 2020 Cal. Stat. A-84, A-86 (codified at CAL. CIV. CODE § 1798.100-99)

The regulator could promote comprehension of the privacy levels by developing descriptions written in clear and plain language—and informed by insights from psychology—and by standardizing these descriptions across data intermediaries. We similarly see value in the development of graphical designs describing the privacy levels that would be standardized across intermediaries. Our insistence that intermediaries describe the privacy levels in plain language resembles the GDPR’s stipulation that web services communicate how they use personal data in “clear and plain language.”⁵⁰

Unlike the GDPR, however, our approach would provide data intermediaries with specific and standardized descriptions of data-share levels. The constancy of data-share level descriptions across intermediaries would make it clear to consumers that all intermediaries offer the same privacy levels and facilitate learning what the levels mean over time. The standardized clear-and-plain-language descriptions of the data-share levels should also describe, and provide examples of, the risks associated with monetizing their data. Better choices would result from consumer understanding of both the benefits and costs of data sharing.⁵¹

Our data-share levels would not allow users to customize the types of data that individual web services can use. A user, for example, could not choose to permit one web service to access their Level 3 data, but another service to access only their Level 2 data. The majority of authors rule out this form of customization to simplify web users’ choice problem, which is desirable for the reasons enumerated above. A minority of the authors, however, believe an ability to personalize is critical in securing widespread use of the intermediaries and effectuating the control right our proposal promises. We also, note, however, that a user who did not wish to share data with a particular web service could choose to access that web service anonymously under our proposal.

One criticism of our proposal is that consumers would overvalue

50 It also resembles the CPRA’s insistence that “Consumers should be entitled to a clear explanation of the uses of their personal information.” *Id.*

51 *Active Online Choices: Designing to Empower Users*, THE BEHAVIOURAL INSIGHTS TEAM, DOTEVERYONE & CTR. FOR DATA ETHICS & INNOVATION (Nov. 2020) <https://www.bi.team/wp-content/uploads/2020/11/CDEI-Active-Online-Choices-Desk-Research-Write-up-FOR-PUBLICATION-1.pdf> [<https://perma.cc/BXH6-W3W9>] (suggesting a series of principles for designing choice architecture that promotes users’ ability to make active choices, including making the trade-offs involved in a choice interactive—i.e., allowing the user to interact with, or experience, what the trade-off means).

the tangible, short-run benefits of remuneration from data sharing relative to the risks of data sharing, which are uncertain and may only be realized after many years. Although we take this criticism seriously, we hope that the intermediary regime's data security regulations mitigate the criticism. We also hope that our standardized, plain-language descriptions of the privacy levels would help consumers understand the risks associated with each privacy level. We view our proposal as an improvement over the status quo in this regard, as the status quo offers consumers little effective control over their exposure to risks associated with data sharing.

A related concern is that a system allowing consumers to monetize their data could increase inequality in access to privacy or freedom from being targeted, by providing poorer consumers with greater incentives to sell their data.⁵² This is particularly concerning because malicious forms of targeting often prey on people of lower socioeconomic status (e.g., predatory loans).⁵³ However, our proposal limits web services' abilities to target users relative to the status quo in which targeting is unavoidable for most web users and does not involve compensation for these users. Additionally, our proposal is compatible with consumer protection regulations intended to limit malicious targeting.

B. Mechanics of the User Interface and Adoption

It is important to consider the mechanism by which users would sign up with a data intermediary. There are many options, and we don't claim expertise in marketing, user interface design, or other knowledge sets that might inform the design decision. With these caveats in mind, however, we recommend that the regulator create a standardized application (we will refer to this as the Data Manager going forward) that would come pre-installed on devices with capabilities for accessing the internet. If this is part of U.S. regulation, a developer of any operating system for consumer devices sold in the U.S. must install the regulator's Data Manager program. When the user first connects to the internet on a device with a Data

52 See Stacy-Ann Elvy, *Paying for Privacy and the Personal Data Economy*, 117 COLUM. L. REV. 1369, 1406-13 (2017).

53 See Craig E. Wills & Can Tatar, *Understanding What They Do with What They Know* 13 (Workshop on Priv. in the Elec. Soc'y, 2012) (showing the relevance of this concern for Facebook; in particular, finding that Facebook targeted ads to users on the basis of sensitive personal characteristics such as health status and sexual orientation).

Manager installation, the Data Manager would present the user with a choice menu displaying the privacy levels, the standardized descriptions of each level, and the dollar range of compensation for each level. Once the user has selected a privacy level, the Data Manager would display a listing of data intermediaries and the compensation level and terms offered by each for the user's selected privacy level.

Evidence suggests that a significant share of users, despite the compensation offered by intermediaries, would wish not to engage with the Data Manager and would instead quickly click through its choice menus. To protect these users, we suggest that the regulator specify default choices. One default, for example, could be the selection of Level 2 and the data intermediary that offers the highest level of cash compensation for that privacy level.

Over time people would replace their devices with new ones that open with a Data Manager, prompting them to register with an intermediary when they initialize the device. Web users would also voluntarily connect their older devices to intermediaries as information about intermediaries' benefits spreads. Nudges and incentives may be a better method of establishing this market than a mandate. Growing awareness of the intermediaries' payments to consumers could give those who are hesitant a financial incentive to sign up. And if competition among the intermediaries works as it should, we would expect the intermediaries that pay the most to their users, or return the highest percentage of advertising spend, would trumpet that fact in advertising, creating an incentive not just to participate in the system, but to sign up with the particular intermediaries that consumers think will pay them the most.

Data intermediaries' offerings to advertisers would become less valuable if their consumers *also* joined competing intermediaries, as this would nullify the intermediary's status as a local monopolist over its consumers' data. If a user were paid their value, they would have a strong incentive to be exclusive with one intermediary. For this reason, an intermediary should be able to offer terms that applied to an exclusive consumer contract at a given point in time, although it should be straightforward for the consumer to switch to a new intermediary using the Data Manager application described in the next Section.

There would likely always be some users who do not belong to a data intermediary. Such a user might actively provide information to web

services for the purposes of servicing the user, but the web service could not monetize that personal data in exactly the same way it could not monetize enrolled users' data. It is critical that these users would not be profitable for web services in order to ensure that there would be no incentive for platforms to discourage users from joining an intermediary. If users who wished to share their data earned significant payments from an intermediary and those who preferred limited sharing could manage their privacy more effectively through an intermediary, consumers would have incentives to enroll. Above we explain why we propose that new devices come with a default enrollment stage to raise participation.

If the data of a web user who does not register with an intermediary were treated similarly to that of a web user who selects an intermediary's Level 0, it might seem that a privacy-concerned user who would select Level 0 over the other levels would have little reason to sign up with an intermediary at all. This would be especially true if the intermediary, which could not monetize its Level 0 clients, charged a fee to these clients rather than remunerate them. Various services offered by intermediaries to Level 0 clients, however, would make it worthwhile for web users who would select this level to sign up for intermediaries. In the remainder of this Part, we discuss several of these services.

C. Switching among Intermediaries

In order to incentivize intermediaries to compete for consumers based on the size of their payments, it is important that competition between them be vigorous. This means that the regulator must set up rules to lower switching costs and create salience around the choice of intermediary.

The Data Manager would facilitate choice when a user first operates a new device. Likewise, the Data Manager would be the tool users employ to enroll in an intermediary each year. The regulator could intensify competition by choosing an "open enrollment" period during which users would be presented with salient information about the remuneration they obtained (or fees they paid) in the current year and the offers available, at their current privacy level, for the coming year. The regulator could develop the information and messaging for intermediaries to deliver to users to facilitate their choices. Users would be directed to the Data Manager where they could make the choice in a controlled environment.

Based on evidence from other markets, there may be many users who are passive and do not make an active choice of intermediary.⁵⁴ The regulator may wish to develop an automatic enrollment scheme that is fair to users and intensifies competition in the marketplace. As already mentioned, auto enrollment could make a conservative choice such as privacy Level 2 and the highest cash price in that level. If multiple intermediaries had similar cash prices, permitting them all to be allocated a share of passive users would intensify competition. A user who is automatically enrolled should have the chance to make a subsequent active choice of intermediary. An alternative system would shift many of the users who exert minimal effort to the selection process from the lowest-compensating intermediary to the highest-compensating intermediary. Users other than those signed up with the highest-compensating intermediary would receive a notification during open enrollment of the form:

Your current provider offers \$X less than the best offer for the same level of privacy you have currently use. Do you want to:

A: Look at Choice Screen

B: Switch to Best Paying Offer

C: Stay with Current Provider

Such a notice would operate as a semi-automatic switch, resulting in users who exercise minimal effort selecting their data intermediary

54 See, e.g., Kate Ho, Joseph Hogan & Fiona M. Scott Morton, *The Impact of Consumer Inattention on Insurer Pricing in the Medicare Part D Program*, 48 RAND J. Econ. 877 (2017) (demonstrating that consumer inertia in the U.S. healthcare market allows insurers to charge higher premiums); Ali Hortaçsu, Seyed Ali Madanizadeh & Steven L. Puller, *Power to Choose? An Analysis of Consumer Inertia in the Residential Electricity Market*, 9 Am. Econ. J. 192, 220-24 (2017) (documenting significant consumer inertia in the choice of electricity provider and estimating that information interventions can significantly raise consumer surplus); Lukasz Grzybowski & Ambre Nicolle, *Estimating Consumer Inertia in Repeated Choices of Smartphones*, 69 J. Indust. Econ. 33, 47-54 (2021) (documenting how consumer inertia facilitates concentration in the smartphone industry); Alexander MacKay & Marc Remer, *Consumer Inertia and Market Power* 13-19 (Harv. Bus. Sch., Working Paper No. 19-111, 2022), https://www.hbs.edu/ris/Publication%20Files/19-111_298206b6-5217-4905-a381-d7173ae957cc.pdf [<https://perma.cc/FFL3-UE75>] (documenting how consumer inertia impacts the simulated price effects of a merger in the gasoline industry).

switching in large numbers the intermediary that pays the most to users.

To keep service levels high, users would want to bring their web-usage data with them when they switch intermediaries. To lower switching costs, the regulator would need to require that data intermediaries transfer raw consumer data in a standardized format upon request. The data format should be specified by the regulator, so it would be consistent across intermediaries. If a user's data were transferred in an unusable format, it would frustrate the goal of easy switching and vigorous competition. To encourage the development of technologies that maximize the value of web users' data, we would not require intermediaries to share any secondary analysis that they have applied to a web user's data when that web user switches to a different intermediary. The intermediary would retain the property rights to the algorithms or learning it created from its former users, but not their raw data. Once a user is no longer enrolled with an intermediary, it would be required to delete that user's data. If a user did not re-enroll with an intermediary, prior to deletion the intermediary would need to send the user their raw data in the standardized format, so the consumer controlled the data, or transfer them to a different intermediary.

A regulator may need to address the possibility of consumers multihoming across devices. One could imagine, for instance, a consumer using one intermediary for accessing the internet on their laptop and a different intermediary for accessing the internet on their mobile phone. The consumer's data specific to any particular device would not be as rich as the pooled version. Ideally, this behavior should be prohibited because it would make the consumer's data less valuable and harm them financially. Additionally, the consumer's platform would lose its position as a local monopolist over that particular consumer's data when the consumer used different intermediaries on different devices. The policy response to this problem would depend on whether equilibrium prices result in a financial gain or penalty to users who run a different account for each device as well as on technological solutions for monitoring it.

Conversely, multiple consumers (e.g., members of the same household) could share a device. One possibility is to allow consumers to choose different intermediaries by using different device accounts through a browser, for example. Another is to establish a "one device-one intermediary" system in which data from a smart refrigerator,

for example, is collected by a single intermediary, which avoids the unworkable solution of asking different household members to “log in” each time they peek in the fridge.

D. Enabling Data Portability

One of the more useful capabilities of a data intermediary would be its ability to lower switching costs between web services. For example, if a user moves from one ecommerce site to another, the new site would not initially have data on the user’s methods of payment, frequent mailing addresses, past purchases, and other information that would improve the quality of service. For this reason, the user might not want to switch ecommerce sites, and, in turn, new entrants into ecommerce would be discouraged from entering. A consumer’s data intermediary would often have the data needed to lower these switching costs.

We propose that users be able to instruct intermediaries to transfer relevant data to approved web services. For example, the entering ecommerce site could prompt a new user to authorize their data intermediary to send categories of data from their existing ecommerce site. Such a tool must be carefully overseen by the regulator because it would be capable of transferring large amounts of the consumer’s data. The regulator might consider requiring that web services wishing to receive ported data acquire a license. Certifying the security of web services should increase their attractiveness to consumers and thereby increase contestability. An alternative method might involve downloading to a uniform format that then is easily uploadable to a different intermediary.

IV. Types of Data Use

In this Part, we discuss various uses of data generated by web users from the perspective of web services. The three major uses of web users’ data that we identify are (i) servicing users, (ii) targeting users, and (iii) conducting analytics. Each type of use would imply different restrictions in terms of data-access rights. Additionally, the treatment of data used for analytics would bear important consequences for the competition policy implications of our proposed data intermediary regime.

A. First-Party Data for Servicing Users

The emergence of the internet as a means of communication has created significant economic value, which sensible regulation should aim to safeguard. The internet requires a minimal exchange of data to function and achieve gains of trade between web users and firms, and these essential minimal data flows should be free: firms should not face restrictions in accessing data that fulfill the purpose of enabling the technology and the core value proposition that the firm offers to the web user.

Within the context of a web user's interaction with a web service, the category of *data for servicing users* encompasses all data required to allow the web service to provide its core services as requested by the web user. Examples of data for servicing users include data required to order products (e.g., shipping and billing addresses), receive directions (e.g., real-time location data), and send messages (e.g., directories of social connections). In order to allow web services to offer attractive products and to accommodate the manifold beneficial uses of web users' data, the privacy levels defined in the web user section therefore would not apply to data for servicing users. That is, web services could generally use data for providing core services requested by users without paying intermediaries for the right to use these data. Note that the classification of information as data for servicing users does not reflect any intrinsic characteristic of the information but rather the purpose for which the information is used in a particular context. The fact that LinkedIn uses employment-history data for servicing users by providing them with digital resumes does not mean that LinkedIn's use of that data for other purposes (e.g., selling the data to recruiters) would qualify as data for servicing users.

The less stringent rules on data needed for servicing the user may be abused by web services that make overbroad claims about what they need. A regulator would inevitably need to investigate difficult cases and disallow unnecessary data collection. A regulator might want to engage in rulemaking to create clarity among market participants. We recommend that no use of data for targeting users or for analytics can qualify as a use of data for servicing users, even if it is requested by the user. This delimitation provides a broad definition of data for servicing users while enabling our goals of web user remuneration and privacy control.

B. First-Party Data for Targeting Users

We define targeting as encompassing all instances in which web users' data are used to assist in promoting services that would cost the user additional resources, whether the payment takes the form of money or data. Recommendations that do not lead to more user expenditures, such as film recommendations for a user that already has a Netflix subscription or Spotify's compilation of playlists, would be exempted. Likewise, an exercise app that reminds the user to stretch or take a walk after periods of physical inactivity would be exempted. Recommendations on an ecommerce site would, however, count as data for targeting users because following the recommendations of the platform by buying the highest-ranked product would cost the consumer money while raising the revenue of the ecommerce site. Likewise, recommendations for apps that charge in some way (e.g., in-app purchases as well as the app itself) would also be commercial recommendations.

A helpful way to think about targeting is that it leverages private signals about consumer intent. Search advertising is targeted for this reason. Search ads are chosen based on information the consumer provided to the web service; that information constitutes a private signal of consumer intent. A user who types a query into a search engine such as "best quality running shoes" is actively giving specific information to the web service. In this example, the same piece of personal data could be used to target display advertising to the user. We would categorize advertising based on the query as using personal data and therefore subject to the regime.

By contrast, a user who is browsing an online newspaper and chooses to read a story about running has revealed only limited information about herself—she is interested in a story about running. That piece of information is fairly vague since the reader could be a runner, could be related to the writer of the story, could live near the route of the run, or have another reason for reading the story. An indirect revelation of interests that is mediated through the publisher, and *which requires no data generated by the web user*, would be contextual. Drawing the line between contextual and personalized advertisement using the criterion of the involvement of a publisher would create good economic incentives for publishers to create compelling and specific material. But we expect the line between these types of advertising to be unclear at times, and the regulator would have to develop guidelines to help web services comply with the rules.

C. Data for Analytics

The interactions between web users and web services generates a constant flow of data that are potentially useful for conducting analytics and improving service quality. For example, a company that uses a recommendation system needs access to data about the success of previous recommendations in order to further develop and improve its algorithm. The treatment of data for analytics relates to data that have been generated by web users in the past. The use of data for analytics does not rely on the identity of the user who generated the data. Nor do the analytics directly cause the user to be contacted to make any additional purchases.

It is not obvious what the correct policy for data analytics is, and more research in this area would be welcome. If web services were permitted to freely collect first-party data on their own users for analytics and product improvement, then consumers would gain from the resulting innovation and quality. However, there are two advantages to requiring the web service to purchase access to these data to carry out its analytics. First, it would increase the intermediary's revenue to be passed on to web users. Second, the regulator could issue rules governing the circumstances by which intermediary could make the data available for analytics by entrants, presumably at the same cost. For example, the rules might prohibit a dating site from gaining access to raw data collected from other dating sites, even for analytics, because such data reveal highly sensitive information regarding preferences and proclivities. Competitors could train their algorithms on rivals' databases and overcome scale-disadvantages.

We note that a system that gives the firm that created the data a lower cost of analyzing it would create good incentives for that firm to enter and innovate in the first place. Moreover, consistent with users' data-share levels, data intermediaries may sell access to these data so that entrants and competitors may also improve their analytics. If the intermediary sells data in an equitable and nonexclusive manner, all entrants would be able to pay to learn about the market—through existing users. The regulator could promote entry by establishing rules that prevent exclusives and discrimination in the use of data for analytics.

V. Controlling the Behavior of Parties

A. Risks to Users

Data intermediaries would possess extensive control over consumer data, which raises the concern that they would become targets for attackers aiming to abuse or steal data. One protection a regulator could mandate is strict compliance with best practices for data protection and regular self-assessments and third-party audits. We additionally propose that the regulator hold data intermediaries and web services to the principle of data minimization, which is one of the central principles of the European Union's GDPR. In our setting, enforcing data minimization by regulation means establishing rules that prevent intermediaries from sharing or using more data than is pertinent to the purpose of a particular application of web users' data. It also means minimizing the storage of users' data in places where it faces the risk of a breach. Both intermediaries and web services would have a role to play in respecting data minimization; each type of agent would be capable of exposing its clients' data to risks and should actively minimize the exposure of these clients' data to risks.

The specifics of the regulations intended to promote data minimization should be based on the advice of data security experts, and deliberations about these regulations should acknowledge the importance of not creating unnecessary entry barriers. With these regulations in hand, the regulator can use a combination of audits, investigations into complaints, and technological solutions to obtain compliance.

To ensure that the regulator could effectively respond to conduct by intermediaries that violates their fiduciary duties or other rules, we recommend that data intermediaries be required to hold a license from the regulator. A system of licensing gives the regulator the ability to create standards, strict data protection regulations, and responsibilities for intermediaries. Such a system would also facilitate the punishment of intermediaries that violate these standards by revoking their licenses or levying less severe sanctions, for example, fines.

Last, our proposed regulation would hold data intermediaries to strict standards for the protection of their users' data to which other firms in the digital economy may not be subject. A web user who signs up with an intermediary and selects Level 0 would therefore receive a higher level of data protection than a user who does not sign up with intermediary.

Another issue of concern is whether a web service would discriminate based on a user's data-share level choice. When data-share level choices are correlated with web users' personal characteristics, then a web service's knowledge that a web user has selected a particular privacy level would be a noisy measure of that web user's characteristics. Suppose, for example, that higher-income web users are more likely to choose Level o. This could be because they fear facing price discrimination based on their incomes, or because they understand the risks of data sharing more deeply than the population on average.⁵⁵

Such a link between income and privacy choices implies that online firms with knowledge about privacy choices would be tempted to offer higher prices to consumers that select stricter privacy levels. This form of price discrimination may be undesirable for several reasons. First, it may reduce consumer welfare (in that paying a higher price without benefiting from output or quality improvements necessarily reduces welfare), even holding privacy choices fixed. Second, it could lead to an inefficiently low uptake of the strictest privacy choices. Consumers may anticipate that selecting strict privacy levels adversely affects the prices they receive down the line. For these reasons, we suggest that the regulator prohibit web services from attempting to infer web users' privacy choices in the data intermediation regime.

B. Monopolization of the Intermediary Market

Data intermediaries could themselves become large digital platforms that exercise market power in ways that affect other market players. A monopolist intermediary would hold a better bargaining position with large digital platforms than a small intermediary in a competitive market. Therefore, the monopolist intermediary may be better able to extract surplus from platforms on behalf of its users. This is, however, not likely to deliver the best outcomes for users. A fiduciary duty to

55 For example, households in high-income neighborhoods are systematically charged more for online tutoring packages. Jeff Larson, Surya Mattu & Julia Angwin, Unintended Consequences of Geographical Targeting (Aug. 31, 2015) (unpublished manuscript) <https://techscience.org/a/2015090103> [<https://perma.cc/KEC3-ZS4X>]. There is also empirical evidence that socioeconomic status positively correlates with information and computer technology literacy, and it seems plausible that agents with higher computer literacy levels may also have a stronger desire for privacy due to a deeper understanding of how their data are used. See Ronny Scherer & Fazilat Siddiq, *The Relation Between Students' Socioeconomic Status and ICT Literacy: Findings from a Meta-Analysis*, 138 *Computs. & Educ.* 13, 21-28 (2019).

enrollees would be much harder to enforce if users have little choice of data intermediary and if the regulator has little visibility of alternatives. Furthermore, a monopolist intermediary may be inefficient, have high costs, and generally provide a low rate of compensation to consumers. (A loss ratio rule will limit this problem.) A monopolist would also have poor incentives to engage in sophisticated analytics that enable it to provide effective targeted advertising, and this would in turn be bad for both advertisers and users. In general, all these markets would perform better if there were robust competition between intermediaries.

We have described above what the regulator can do to create as much competition as possible between intermediaries. This includes a standardized set of privacy levels, a regulated dashboard to provide users with clear and simple information, salient prices and price competition, a specific period during which all users make their annual choice of intermediary, and mandatory portability of data from one intermediary to another.

However, as with any new market, it is not clear *ex ante* how much concentration may be driven by economies of scale. For example, some scale would be required of an intermediary for its data to be used in analytics. Suppose, for instance, that a firm wishes to estimate the click-through rate for home appliance ads for members of a specific demographic group—for example, white men between twenty-five and twenty-nine years old residing in the greater New York City area. To accurately estimate this rate, the intermediary must have tracked a sufficient number of members of this group who have encountered a home appliance ad. Given that the gains to accuracy from a larger sample size are diminishing, however, the importance of scale in conducting analytics may still allow for several intermediaries with the requisite data for conducting these analyses. Likewise, “social data” that has an externality on other users would reward an intermediary that serves a large share of a cohort. By internalizing the data externality, the users and the data intermediary would gain. For targeting advertising to a user, however, scale is less important. If ads displayed to a particular user sell for a higher price when combined with a user’s demographic information and browsing history, then this single user’s data would be valuable on their own.

Most authors expect that differentiation among intermediaries would naturally limit concentration, although some have significant concerns

about the tendency to tip. Intermediaries may contribute their profits to causes that attract a subset of users but not all. Intermediaries may specialize in serving certain types of users. That specialization may cause the development of proprietary and useful algorithms permitting effective monetization of those consumers.

We propose a prohibition on web services holding ownership stakes in data intermediaries and on data intermediaries owning web services.⁵⁶ In general, avoiding vertical integration by the intermediary would prevent some competitive issues that could arise. Similarly, competition would be enhanced by a prohibition on exclusive contracts between intermediaries and any other parties such as consultants, demand side platforms (DSPs),⁵⁷ and so forth. A regulator tasked with maintaining competition could be empowered with tools it could use if any one intermediary became dominant. For example, if an intermediary passed a certain market share threshold the regulator could be authorized to divide that intermediary into two independent data intermediaries, each with the software and algorithms of the original, but only half of the users.

VI. Pertinent Legal Issues

A. Right to Be Forgotten

A central goal of this proposal is to give consumers greater control of their data. An important part of this endeavor is the implementation of the “right to be forgotten” as defined by the GDPR, which gives web users the right to instruct web services to delete their information about the user.⁵⁸ The practical implementation of this right has turned

56 This is in line with the recommendation of the German Data Ethics Commission that “privacy management tools/personal information management systems must continue to serve as dedicated custodians of data subjects’ interests, and ... conflicts of interest must be ruled out.” See *Opinion of the Data Ethics Commission*, Data Ethics Comm’n. 135 (Dec. 2019), https://www.bmi.bund.de/SharedDocs/downloads/EN/themen/it-digital-policy/datenethikkommission-abschlussgutachten-lang.pdf;jsessionid=4045AFAA7DE42634170DBC87D0936584.1_cid322?__blob=publicationFile&v=5 [<https://perma.cc/V3YA-5L2V>].

57 DSPs assist advertisers to implement programmatic ad campaigns by determining whether and what to bid on opportunities offered for auction through an exchange, with the goal of placing a large number of high value ads at a low price to their advertising clients.

58 Council Regulation 2016/679, art. 17, 2016 O.J. (L 119) 1, 43.

out to be challenging. As a response, there are initiatives such as the Data Rights Protocol that aim to facilitate such requests.⁵⁹ Given their central position in the data markets we envision, data intermediaries may have an easier time handling these requests and ensuring that web services comply when a user exercises their right. Furthermore, we describe certain data above—personal data generated by one web service but used for analytics by another—for which the regulator should establish time boundaries, after which such data must be destroyed. There may be other circumstances in which the regulator should impose time limitations on data access. If enforced, these too should ease implementation of a right to be forgotten by reducing the number of services holding data over time.

B. Violations

Large web services would have strong monetary incentives to find ways of avoiding the need to pay intermediaries to access web users' data. For instance, they could construct separate databases on web users that could be used for targeting without the need of seeking approval from these web users' intermediaries. Such practices, which would be illegal under our proposal, would undermine our envisioned system of intermediation. One way to combat attempts to circumvent intermediaries while accessing web users' data is to design data-access systems in ways that prevent the leakage of raw data. Advertisers, for instance, could be required to programmatically submit bids to intermediaries that are conditioned on web users' characteristics, rather than receive the data of these web users in raw form from intermediaries. Additionally, web services seeking to perform analytics could be required to conduct these analytics on intermediaries' computers. We do not take a stand on which technologies should be employed to minimize risks of data leaks, but we assign to intermediaries the responsibility of using the most suitable technology for this purpose. The regulator should be empowered to penalize intermediaries and any other market participant at a level that creates deterrence. Other ways to avoid illegal use of web users' data include the use of investigations, third-party audits, and rewards for whistleblowers.

59 Data Rights Protocol, <https://datarightsprotocol.org> [<https://perma.cc/BK5B-EKEA>].

VII. Extensions of the Data Intermediary Framework

Our basic intermediary framework can be extended in a straightforward way to address problems posed by novel technologies, non-standard types of data, and existing digital intermediaries and platforms. We sketch out a few of these here without providing substantial detail on these extensions.

A. The Internet of Things

The internet of things (IoT) refers to devices other than conventional computing devices (e.g., computers, tablets, and mobile phones) that interact with other devices over the internet. Examples of IoT devices include smart refrigerators and televisions that feature internet capabilities. A natural question is how to integrate IoT devices into our data intermediation framework. These devices generate data that, like data generated by the user of computers and mobile phones, can increase overall surplus. For instance, a smart refrigerator might register that a consumer is running out of milk and transfer this information to the consumer's online grocery store, which could then send a targeted recommendation to this consumer's smartphone. Because such a recommendation may prevent an inconvenient situation in which the consumer finds no more milk in their fridge, utilizing this data may raise total welfare.

Given that IoT devices are internet capable, the status quo entails the possibility that the manufacturers of these appliances already collect and utilize such data without restrictions. Allowing this to continue unchecked would stand in contrast to the goals of this Article. Additionally, there are several challenges involved with integrating web users' devices with their intermediation accounts. First, a web user may own many smart devices. Configuring all these devices such that their data may be used by the intermediary may be inconvenient for the consumer. Other challenges result from the fact that IoT devices may be shared by different consumers living in the same household. For example, such consumers may have joined different data intermediaries and may also select different privacy settings. Moreover, the data generated by IoT devices is not necessarily specific to any given individual that uses them but reflects the habits of all users jointly.⁶⁰

The solution to this problem needs more research and exploration.

60 This problem may apply to shared personal computers in particular and may be mitigated by software that facilitates switching between intermediation profiles on a particular device.

The regulator may want to give web users the choice to configure these devices with intermediaries, however, in which case the same rules should apply to data generated from IoT devices as apply to data generated from conventional devices. To understand how this would apply in practice, consider again the example of a smart refrigerator that seeks to notify its owner to purchase a generic grocery item. As long as the web user explicitly requests recommendations of these forms, the recommendations would only rely on data for servicing users under our proposal given that the provision of such recommendations is one of the smart refrigerator's core purposes. But if the refrigerator company wants to serve an owner an ad for ghee, because the refrigerator knows the owner keeps a bottle of coconut oil in between their jar of chili crisp and their tub of white miso, the company presumably should be required to purchase that information.

B. Internet Service Providers

Internet service providers (ISPs) are also able to collect and use data on their customers' online activities. Allowing them to do so under our data intermediation regime would undermine the goals of this proposal. Thus, we specify that a consumer's ISP may not use or share any data on its clients without the consent of these clients' intermediaries. The only exception to this rule concerns data that the ISP requires to provide the consumer with high-quality internet access (i.e., data for servicing its users). For example, an ISP knows a consumer's location and will need to refer to it in order to provide service of equipment. To summarize, we treat ISPs as we treat other web services.

C. Relational Data

Online interactions generate relational data, that is, information characterizing the relationship of a given person with other web users. We propose that a user's intermediary may share relational data involving the user as long as the identities of other people described by the data are suppressed. As an example, the user's intermediary could share that the user commented on a friend's Facebook photo but not the identity of that friend. More research is needed to understand the implications of regulations in this area.

VIII. Conclusion

The above discussion demonstrates that establishing a regulatory environment for successful data markets is complex. We hope the ideas in this Article serve as a useful starting point for policy makers thinking through how to make these markets better serve consumers. The status quo—wherein almost all the profit from digital advertising flows to a few large companies, users exercise little to no control over the collection and use of their personal data, and large platforms maintain a stranglehold over the use of collected data, preventing their beneficial use—does not represent a fair outcome for either consumers or advertisers, other market participants, or even the citizenry who might benefit from innovative data uses. It is unlikely to be efficient either: Competitive remuneration for the content that draws users to the web would stimulate the amount and variety of content consumers want, while the availability of their personal data at competitive rates to both entrants and incumbents would enable the entry of web services that use these data.

A market for personal data that allows users to control how their data are used, as well as the chance to benefit from their monetization, addresses multiple interrelated problems at once: the market failure whereby large platforms obtain valuable inputs without user choice and compensation—which reinforces their market power and insulates them from competitive pressures to reform their data practices; the resulting lower quality of user experience and privacy online; and the lack of a data-sharing mechanism to facilitate prosocial innovation that leverages personal data. A market for personal data, properly constructed, would allow web services to engage in socially valuable advertising as well as investment in product improvements. And by offering a range of sharing tiers, a well-designed market for personal data would also give effect to heterogeneous user preferences regarding the use of their data. We stress, however, that there are many tricky economic issues involved in making such markets work. More research by economists is needed in this important area.

Setting	Year	Sources	US, total	US, p.c.	Global, total	Global, p.c.
US online ad spending	2020	a	\$140B*	\$424	\$567B	\$72
Global digital ad spending	2020	b	\$93B	\$282	\$378B*	\$48
US data brokerage industry	2020	c	\$200B*	\$606	\$810B	\$102
Google ad revenue	2020	d, e, f	\$49B	\$148*	\$147B*	\$19
Amazon ad revenue	2020	g	\$16B*	\$49	\$65B	\$8
Twitter ad revenue	2020–2021	h, i, j, k	\$7B	\$21*	\$134B	\$17*
Facebook ad revenue	2020	l, m, n	\$52B	\$157*	\$253B	\$32*
Facebook Study Project	2019	o	\$40–79B	\$120–240*	\$162–320B	\$20–40

Table 1. Back-of-the-Envelope Estimates of the Value of Data⁶¹

61 All figures are in U.S. dollars. The “total” columns report aggregate valuations of data for the respective geography, whereas the “p.c.” columns report per capita valuations. Where information on the size of the user base of the web service is available, we use this user base size to compute per capita values and obtain the total valuation by multiplying the per capita values by the size of the population of the geography. If there is no information about the size of the relevant user base for a setting on which we base a row of the table, and the source refers to the total over a geographical entity (United States or global), then we use this value for the total valuation, and we compute the per capita value by dividing the total valuation by the population of this geographical entity. We use a population of 330 million for the United States, and a population of 7.9 billion for the world. We use the ratio between the nominal global GDP expressed in U.S. dollars and the nominal U.S. GDP to convert the total values between different geographies. The nominal world GDP is \$85 trillion, and the nominal U.S. GDP is \$21 trillion. The resulting ratio is 4.04. *GDP (current US\$)*, World Bank (2020), <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD> [<https://perma.cc/R4B9-YW7J>].

An asterisk denotes a value drawn directly from the source on which we base the entry’s row of the table.

The date in the “Year” column indicates the year corresponding to each data valuation. The “Sources” column reports the labels of the sources on which we base our valuations. Table 2 provides the source corresponding to each alphabetic label.

All rows with a setting labeled “ad revenue” contain data valuations that reflect the value of data as used in advertising only. We report valuations based on the overall revenue of web services’ digital advertising operations. We acknowledge the corresponding failure of these estimates to exclude revenue from purely contextual advertisements that do not rely on consumer data.

	Data	Source
a	US online ad spending in 2020: \$140B	<i>Outlook 2022: The US Digital Advertising Ecosystem</i> , PWC & IAB 4 (Oct. 2021), https://www.iab.com/wp-content/uploads/2021/10/IAB-PWC-Outlook-2022-The-Digital-Advg-Ecosystem-Oct-2021.pdf [https://perma.cc/564L-7N5C].
b	Global digital ad spending in 2020: \$378B	Ethan Cramer-Flood, <i>Worldwide Digital Ad Spending 2021</i> , INSIDER INTELLIGENCE (Apr. 29, 2021), https://www.insiderintelligence.com/content/worldwide-digital-ad-spending-2021 [https://perma.cc/WAW4-DAFL].
c	US data brokerage industry in 2020: \$200B	Davad Lazarus, <i>Column: Shadowy data brokers make the most of their invisibility cloak</i> , L.A. TIMES (Nov. 5, 2019), https://www.latimes.com/business/story/2019-11-05/column-data-brokers [https://perma.cc/9KBF-ZHYM].
d	Google U.S. ad revenue in 2020: \$40B	Julia Faria, <i>Google ad revenue in the U.S. 2019-2024</i> , STATISTA (Jan. 6, 2023), https://www.statista.com/statistics/469821/google-annual-ad-revenue-usa [https://perma.cc/748V-WVQ2].
e	Google unique visitors in The United States in 2020: 270M	Tiago Bianchi, <i>Google – Statistics & Facts</i> , STATISTA (Jan. 3, 2023), https://www.statista.com/topics/1001/google/#topicOverview [https://perma.cc/4AC4-PNS4].
f	Google global ad revenue in 2020: \$147B	Alphabet Inc., Annual Report, 33 (Form 10-K) (Feb. 2, 2021).
g	Amazon U.S. ad revenue in 2020: \$16B	Alexandra Bruell, <i>Amazon Surpasses 10% of U.S. Digital Ad Market Share</i> , WALL ST. J. (Apr. 6, 2021), https://www.wsj.com/articles/amazon-surpasses-10-of-u-s-digital-ad-market-share-11617703200 [https://perma.cc/2Z2P-WTFS].
h	Twitter U.S. ad revenue in 2020: \$1.6B	Blake Drosch, <i>Why Have We Raised Our Twitter Forecast?</i> , INSIDER INTELLIGENCE (Feb. 22, 2019), https://www.insiderintelligence.com/content/will-the-twitterpurge-bolster-ad-growth [https://perma.cc/DPE6-ECP4].
i	Twitter active U.S. users in 2021: 77.8M	<i>Twitter Statistics and Trends</i> , DATAREPORTAL (Aug. 15, 2022), https://datareportal.com/essential-twitter-stats?rq=twitter [https://perma.cc/U5HX-MF52].
j	Twitter global ad revenue in 2020: \$3.2B	Twitter, Inc., Annual Report (Form 10-K) (Feb. 17, 2021).
k	Twitter global users in 2020: 187M	<i>Twitter Statistics and Trends</i> , DATAREPORTAL (Aug. 15, 2022), https://datareportal.com/essential-twitter-stats?rq=twitter [https://perma.cc/VDK2-TZAQ].

	Data	Source
l	Facebook U.S. & Canada ad revenue in 2020: \$40B	S. Dixon, <i>Facebook: quarterly revenue in the U.S. and Canada 2010-2021, by segment</i> , STATISTA (May 2, 2022), https://www.statista.com/statistics/223280/facebooks-quarterly-revenue-in-the-us-and-canada-by-segment [https://perma.cc/Q8YJ-AMBD].
m	Facebook U.S. & Canada monthly active users in 2020: 255M	<i>FB Earnings Presentation Q3 2021</i> , FACEBOOK, https://s21.q4cdn.com/399680738/files/doc_financials/2021/q3/FB-Earnings-Presentation-Q3-2021.pdf [https://perma.cc/76CR-DSYM].
n	Facebook average revenue by user in 2020: \$32	S. Dixon, <i>Meta: average revenue per user 2011-2021</i> , STATISTA (Dec. 16, 2022), https://www.statista.com/statistics/234056/facebooks-average-advertising-revenue-per-user [https://perma.cc/V288-DYPW].
o	Facebook study project (2019): monthly compensation of \$10–20 per month	Josh Constine, <i>Facebook’s New Study app pays adults for data after teen scandal</i> , TECHCRUNCH (June 11, 2019), https://techcrunch.com/2019/06/11/study-from-facebook [https://perma.cc/6JZ4-7EL7].

Table 2. Sources

Appendix 1, “Narrative Summary of Related Ideas and Proposals”; and Appendix 2, “Narrative Exploration of the Monetary Value of Personal Data”, can be found in the original article, published online at <https://openyls.law.yale.edu/handle/20.500.13051/18331?show=full>.

Chapter 8.

Meta's Offer

December 13, 2023*

Meta has been contesting what constitutes compliance with the General Data Protection Regulation ever since that law came into force in 2018. This column argues that with its new offer, Meta artificially lumps together two very different levels of privacy while offering a service that no one asked for: one with a high subscription price, tracking, and no ads. Europe is missing the choice that is the most popular, 'just right', option: advertising based on what a user does on Meta's site.

Meta's situation in Europe mimics the traditional tale of Goldilocks, who finds the bears' cottage and helps herself to the porridge that is too hot followed by the porridge that is too cold before finding the porridge that is 'just right'. Meta has a similar problem. It has offered dishes that are too hot and too cold, while the regulator and the public want the service that is 'just right' to be brought to the table. Not only is this option the most popular, it is responsive to the requirements of European privacy laws.

Meta has been contesting what constitutes compliance with the General Data Protection Regulation (GDPR) ever since that law came into force in 2018. The Irish data protection authority is widely viewed to have enabled Meta's resistance as well as greatly slowed the process.¹ If Meta were to fully comply, it would earn less profit in Europe (as evidenced by the fact that the company has not already complied), and that profit loss provides a reason to engage in what seems to be endless litigation.

After delaying compliance with the law for five years, the fact that Meta's new offer is worse for consumers than the likely illegal status quo gives the impression that Meta is thumbing its nose at European law. Consumer advocates have already voiced their discontent with Meta's

* Originally published as Fiona Scott Morton, "Meta's Offer," VoxEU Column (13 December 2023), <https://cepr.org/voxeu/columns/metass-offer>.

1 See, for example, ICCL (2021) and an open letter from noyb (https://noyb.eu/sites/default/files/2020-05/Open%20Letter_noyb_GDPR.pdf).

subscription model and filed complaints against it, while regulators announced further investigations into its adoption (e.g. noyb 2023, BEUC 2023, Wired 2023). This subjective impression of Meta's attitude is important in the context of a broader roll out of European regulation of digital platforms coming through the Digital Markets Act, the Digital Services Act, and the Data Act, to name a few. If Meta demonstrates that compliance with European digital regulation is effectively optional, or can be delayed indefinitely by costly legal process, the legitimacy of that law will be at risk, as will effective future regulation of digital platforms for the benefit of European citizens.

Consent

The idea of the GDPR is to protect users from exploitation of their personal data by limiting the ability of companies to gather and use those data without the explicit consent of the user. The analysis below will focus only on the problem of non-sensitive data. The collection and use of sensitive data such as health, sexual orientation and the like are (appropriately) subject to stricter rules. What may be more interesting from a commercial perspective is information that a consumer is actively looking to buy a new car or a holiday at the beach. For digital platforms that fund themselves with advertising, the GDPR offers two legal approaches to use personal data of this type to carry out that business model: either get consent from end users, or use the data only to complete a requested contract with the user.² An example of the latter is an e-commerce company that gathers and uses your home address in order to send you the package that you ordered. The contract option is not a good fit with social media advertising. Knowing that a user browsed some yellow cardigans on Etsy is not necessary to provide that user the content posted by friends and family that is Facebook.com's service. The second option – consent – is therefore the appropriate solution for Meta and others operating ad-supported social media. However, one way users can be manipulated into giving consent is when the platform withholds specifics or does not provide a clear description of what data are being

2 GDPR Article 6: "(a) the data subject has given consent to the processing of his or her personal data for one or more specific purposes; (b) processing is necessary for the performance of a contract to which the data subject is party or in order to take steps at the request of the data subject prior to entering into a contract". CJEU may have left open a path for advertising to be a legitimate interest (section f), but this possibility is beyond the scope of this column.

gathered. Another example is when a digital platform is allowed to control the choice environment and it sets defaults and dark patterns to ensure users 'choose' to share all their data. As explained in recital 32 and stated in Article 4(11) of the GDPR, 'consent' cannot be driven by such dark patterns because that consent is not specific, granular, well-informed, not rushed, and freely given.³ These listed attributes are required of consent given under the GDPR.

We have an important empirical example of users' choices when they are offered a simple and transparent choice. Apple's App Tracking Transparency (ATT), released in April 2021, gave users a simple choice as they opened an app – to be tracked by that app or not. A huge majority of US users (about 85%) chose not to be tracked (Adjust 2023). Meta predicted a loss of \$10 billion in global revenue in 2022 from this change in users' ability to control their privacy (*New York Times* 2022). This real-world pattern of behaviour in a clean choice architecture demonstrates that most users prefer not to be tracked.

The Menu

Meta's services in Europe and elsewhere have earned revenue by selling targeted ads that are inserted into content, and not by requiring the user to pay any money. Its advertising can be based on (at least) three kinds of information: contextual data, personal data from Meta platforms, and personal data Meta gathered by tracking a user across the Internet. Continuing to track and use those latter categories of data is highly profitable for Meta because they improve the match between the ad and the user which, in turn, raises the price of the ad. Higher priced ads generate higher profits.

Interestingly, if Meta's users are willing and able to persist in navigating through layers of the settings menu, it is possible to find an "information and permission" page that allows users to request not to be tracked off Meta properties.⁴ This less intrusive choice is similar the choice offered by Apple in ATT. Meta continues to monetise such a user through selling contextual ads as well as targeting ads based on

3 REGULATION (EU) 2016/ 679 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL - of 27 April 2016 - on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/ 46/ EC (General Data Protection Regulation) (europa.eu)

4 I understand that the way it works is that the data continue to be physically gathered but not associated with a user account.

personal data from the user's activity on the platform itself. The user in this example obtains a Meta service by watching ads but without paying any monetary price, and while sharing personal on-Meta data and not sharing personal off-Meta data. Outside the Apple ATT screen, however, this offer is difficult to find. It requires navigating to remote pages and enduring 'friction', or 'sludge practices', to get to the choices the user wants to make.

Subscription

The offer Meta announced on 30 October is a plan that costs users €12.99 per month if purchased on their mobile devices and shows no ads.⁵ Meta did not announce any lessening of data gathering or tracking, but simply describes the plan as "your info won't be used for ads". The European Consumer Organisation (BEUC) describes it as "choose to lose" (BEUC 2023). There are a number of reasons why this offer appears to disrespect European law.

First, the offer is simply a change in business model – funding the service with a subscription rather than advertising – that does not improve users' privacy at all. Meta states no change in the data collection practices around this offer, meaning that it will continue to track the user.⁶ The GDPR has nothing to say about a platform's business model per se because ads need not profile any user based on their personal data – for example, a platform can show the same ad to all users. Changing a business model only, and not the nature of privacy protection, is not responsive to a request for compliance with a law that controls the gathering and processing of data.

A second issue is that the offer is likely misleading to users who have not been following these debates in detail because it implies that, by paying a subscription, the platform will cease tracking them. Indeed, BEUC has already filed a complaint against Meta for the lack of clarity and truthfulness in the offer (BEUC 2023).

In general, the characteristics that the GDPR requires in order to conclude that users have truly given consent are missing from the offer:

5 Users can buy the service for only €9.99 if they purchase it on Facebook rather than in the mobile app store. Notice that Meta is taking advantage of the DMA by disintermediating the mobile app store. Meta sells the subscription on Facebook and users can then consume the service using a reader app on the handset. Meta charges a higher price on the app store. These features are all enabled by the DMA.

6 BEUC (2023: 5) explains how Meta uses the data to benefit its business.

it is not specific, granular, well-informed, nor freely given. Furthermore, without any change in data gathering, the offer does not improve privacy, so there is no reason for consumers to pay for the subscription if they are interested in keeping their fundamental rights.

Rather, the offer appears to be designed to keep users in the 'free' offer by contrasting it to an expensive subscription. However, the single 'free' offer bundles together the option Meta likes best (full tracking and no compensation for users) with a suppressed option it is trying to avoid (the ad-supported, no-tracking, zero-priced option). The only option not to be tracked while obtaining Facebook freely (outside of iOS) is hidden to users. Users would need to find this option in a second step after agreeing first to the option that includes tracking. This artificially restricted menu of two options will cause users to 'choose' to give away to Meta their valuable data – because of exploitative choice architecture, not because of their true preferences.

What Is a Free Choice?

The European Center for Digital Rights (noyb) has calculated the annual ad revenue per user earned by Meta in Europe between Q3 2022 and Q3 2023 to be €62.88 (noyb 2023). This sum is less than the annual cost of the subscription (€156), meaning that the subscription actually earns the platform more profit per user than the original 'free' business model. This rough calculation suggests that the new offer is a net price *increase* for the gatekeeper while not improving privacy. Given that Meta has been repeatedly found to have a dominant position in personal social networking,⁷ it may be abusive of that position to respond to a requirement for more privacy with a price increase to end consumers while simultaneously misleading them about the privacy benefits.

A third relevant law in Europe is the Digital Markets Act. Meta has been designated a gatekeeper under that law and both Instagram and Facebook have been designed as Core Platform Services that must comply with the rules in the Act by March of 2024. Importantly, only the largest gatekeepers are subject to the DMA, whereas the GDPR applies to all data controllers. Because gatekeepers have entrenched market power, often due to network effects, the DMA mandates a change in

7 See, for example, FCO 2019 Facebook decision B6-22-16, para 165, and Federal Trade Commission v Facebook Inc.: Substitute Amended Complaint for injunctive and other equitable relief (8 September 2021), paragraph 190.

behaviours to increase fairness and contestability. Article 5(2) prohibits a platform from combining data across its own services and between its own and other services without user consent. Consent, again, must not involve dark patterns,⁸ meaning that Meta must offer users clear options and free choice. A ‘choice’ of tracking at a price of zero and no tracking at a price of €156 may not be a free choice for many consumers. Young people, in particular, are particularly vulnerable and may have no income of their own.

The missing menu option is the one that involves no tracking, has a zero monetary price, and shows ads. The DMA describes it concretely in Recital 36 and 37:

Recital 36: To ensure that gatekeepers do not unfairly undermine the contestability of core platform services, gatekeepers should enable end users to freely choose to opt-in to such data processing and sign-in practices by offering a less personalised but equivalent alternative, and without making the use of the core platform service or certain functionalities thereof conditional upon the end user’s consent.

Recital 37: The less personalised alternative should not be different or of degraded quality compared to the service provided to the end users who provide consent, unless a degradation of quality is a direct consequence of the gatekeeper not being able to process such personal data or signing in end users to a service...

The reason it is missing from the up-front menu is likely because Meta realises that market forces would drive consumers away from the tracked option to the non-tracked option if they are offered separately at the same price. To continue with the food analogy, Meta’s offer is like a menu of bad, good, and excellent wine at prices of €10, €10, and €20, respectively. Today the good wine is hidden. But if it were placed on the menu with the other two, why would any consumer buy bad wine for €10 if they can have good wine for €10? Demand for tracking (bad wine) will be small if a user can have a more private service (good wine) for the same price of zero.

8 The DMA Article 13(6) says that gatekeepers may not make “exercise of those rights or choices unduly difficult, including by offering choices to the end-user in a non-neutral manner, or by subverting end users’ or business users’ autonomy, decision-making, or free choice via the structure, design, function or manner of operation of a user interface.”

A Better Menu

The menu of two extremes that Meta currently offers in Europe is missing the choice that is the most popular, 'just right', option: advertising based on what a user does on Meta's site.

It is far better for consumers if Meta offers three options. Ironically, the missing product is already available, but buried deep in Meta's settings; this is the 'just right' service of zero price, no tracking, and ads based on user activity on the platform. The second is a service without any ads and without tracking that comes with a positive price, while the third offers users a negative price to accept tracking of (non-sensitive) activity around the internet.

If Meta wants many users to choose tracking, its price must fall further to make more sharing attractive. Meta will have to offer negative prices, namely, some kind of benefit or subsidy to get users to choose the tracked option. A negative price is symmetric to the positive price that the platform charges to see no advertising at all. The latest rigorous evidence suggests there is a 27% loss when Meta stops using off-Meta data to target a user (Wernerfelt et al. 2022).⁹ If this is the surplus at stake, it will be worthwhile for Meta to make tracking attractive to end consumers.

Selling this option requires Meta to transparently and fairly convince users to give up their privacy by offering them some benefit. Such a contract would need to be fully compliant with all regulations so that it presented a truly attractive option to users and not one that is exploitative. (As noted above, adherence to rules prohibiting the processing of sensitive data is assumed.) Careful design of choice screens that comply with GDPR would be needed. If the new privacy environment is accurately described and the choice environment is fair, users' rights are protected and any choice becomes freely given.

Users may enjoy receiving ads about shoes if they shopped for shoes the previous day and did not find a pair they wanted; or they may benefit from ads about coffee shops in Antwerp if they regularly visit Antwerp. Whether users want such ads is an open, and empirical, question. Users may vary in how much they dislike being tracked around the internet, and in the value they put on the offered benefit.

A gatekeeper that wants to compensate users for being tracked to generate personalised ads could simply give them money. The problem

9 See also 2.4.1 in European Union (2023).

this raises is the likelihood of scammers setting up fake accounts to earn any such subsidy. A more practical approach might be to partner with an entity that can authenticate the user and perhaps is already billing the user, such as their mobile carrier. Users could agree to share more data with Meta in return for Meta providing them a discount on their Orange monthly bill for example. In this way, real users obtain a share of the surplus they create with their data.

Until the law stops gatekeepers from using their market power to simply take valuable user data, the business model of paying consumers will remain underdeveloped. Platforms will need to use tools and strategies to deal with bots attracted by monetary payments. For example, today Meta claims to investors and advertisers that it efficiently authenticates its users by removing fake accounts, and that most users are genuine (e.g. Meta 2019, 2021). Partnering with MNOs where a user is already paying a fee each month, or with app stores that offer in-app purchases like gaming (perhaps Meta will open an app store), could be one strategy that avoids this problem.

Consumers may have a hard time distinguishing the privacy difference between a contextual ad and one that is personalised based on their behaviour on the platform, yet the legal treatment of these practices is different. Depending on how different these ads are in user experience, commercial value, and legal requirements may determine whether it is reasonable for platforms to offer one service – one menu option – that includes both.

Goldilocks Again

With its new offer, Meta artificially lumps together two very different levels of privacy while offering a service that no one asked for: one with a high subscription price, tracking, and no ads. A better menu, one that is both compliant with data laws in Europe and good for consumers, is straightforward. The first option has a subscription price and no advertising. However, this option should not involve Meta gathering the personal data the platform uses to create ads because no ads are being shown; this first option therefore has the least tracking and the most privacy. The second option has no monetary price, shows ads, gathers personal data on Meta, and does not track the user off Meta. A third option asks consumers to share their personal data both on and off Meta in return for a subsidy, or negative price. Here, the Goldilocks metaphor

is useful again. The Apple ATT experiment demonstrated that the middle option can be hugely popular and therefore may be 'just right' in this context. The other two options may be too hot or too cold for some users, but attractive to others. They can be freely chosen if so. In principle, there could be many menu options on either side of the 'just right' choice. Indeed, more competition in ad-supported platforms that may arise under the DMA seems likely to generate a variety of creative options.

Disclosure:

Professor Scott Morton is currently instructed by Dr Lovdhal-Gormsen as an economic expert in Dr Lovdhal-Gormsen's proposed opt-out consumer class action against Meta in the UK Competition Appeal Tribunal. She regularly consults both for corporations and government agencies as an economic expert in antitrust and merger cases. At the time of writing her other clients include Microsoft, SiriusXM, several small US healthcare companies, and several nascent electric auto makers.

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Chapter 9.

Digital Platform Safety and the Problem of Variable Costs

October 13, 2024*

When a firm gains substantial market power, its fear of losing customers to rivals diminishes. This security allows the firm to reduce expensive activities like offering discounts, spending on research and development, and providing high quality service. While price is often the focus of investigation and litigation, one of the lessons from decades of competition enforcement is that firms with high entrenched market power also provide lower quality than consumers are accustomed to receiving in more competitive markets.

Today's biggest competition challenge is enforcement against digital platforms with significant market power. In Europe, enforcement is occurring through the Digital Markets Act, the Digital Services Act, and the GDPR.¹ It is becoming more and more obvious that, absent regulation, digital gatekeepers degrade quality below the level a competitive market would provide, and an important dimension of that quality is safety. This problem is accentuated in the context of a digital gatekeeper for several reasons: consumers have difficulty assessing

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1 The GDPR is designed to raise the quality of digital services by improving privacy safeguards. The DSA requires platforms to measure and mitigate user and social harms. The DMA is meant to increase competition in digital markets so that firms are incentivized to innovate and improve quality in order to retain customers.

quality; consumers are not able to respond to lack of quality; and in some cases there is no regulator to set even the most minimal baseline for quality (as exists in the EU and US for cars or bread, for example).

Moreover, when the government attempts to regulate to counteract these distortions, it may encounter a political economy problem: resistance from the gatekeepers themselves using the considerable political power they have amassed. A law that requires increasing the quality of digital services beyond the level already provided by the incumbent gatekeepers will lower their profits. We know this because if a higher level of quality would increase profit, the gatekeeper would have adopted it already. The level of quality desired by society is likely to be very expensive for the gatekeeper (for reasons we describe below). In some cases, the cost of providing a safe product might exceed the amount consumers would be willing to pay. In other words, the users' value of the safe product is less than the cost of its production. In that situation, a regulation that mandates quality could be an existential threat to the firm. A digital platform would have both an incentive to try to block any regulation, and tremendous resources to do so due to its market power. A problem that arises particularly in the context of digital regulation is that gatekeepers may try to steer regulators toward solutions that are automated, and therefore cheaper, but do not raise quality to the level society requires.

It is becoming increasingly apparent that some digital business models and some digital platform designs are dangerous to individual users and society. The lag in understanding—common when technologies are new—enabled the popularity of digital services among consumers who were, at the same time, being hurt by them. Now that the understanding is widespread that the safety of consumers is at stake, regulation can proceed to trade off costs and benefits as it normally does in areas such as automobiles or tap water. Safety improvements can, of course, be costly, but gains to consumers can likewise be large. The goal of regulation is to adopt those rules that yield consumers a net benefit. For example, a fully informed consumer values the reduction in injury and death from airbags in cars more than the increased cost of safer cars. Likewise, optimal digital regulation will ensure that society (which includes consumers and non-consumers alike) values the reduction in mental health harms more than any increased cost (or reduced excitement) of social media. If a digital platform is driven out of

business by regulation that requires gains to be larger than losses, then it must be the case that the platform had negative value. Home insulation made of asbestos and snacks made of trans fats are examples of products where new information on the danger to consumers and the resulting regulation caused exit of the products. Yet these regulations resulted in a net gain: increases in health and life expectancy.

Why Doesn't the Gatekeeper Already Offer Efficient Quality?

A business strategy that produces a low-quality product for a low cost does not do harm if (1) the product meets the baseline rules a regulator imposes (its net benefit is positive), and (2) consumers are fully informed and affirmatively choose the product. For example, a car that meets all safety standards but has a poor sound system and slower acceleration is lower quality than one with a premium sound system, quick pickup, and a stylish interior. The former is likely to be cheaper; it also meets the needs of some consumers and provides positive net benefits to them. Notice that if quality can be improved for a lower cost than its value to consumers, a manufacturer is incentivized to make that improvement without any need for regulation because it can sell the product at a higher price to the (subset of) consumers who value that quality. This is a common strategy in the automobile market. Indeed, many consumers find the utility from a medium or luxury model to be larger than the incremental cost, which affects the share of the cheapest cars in the market.

Firms competing for the business of consumers who can evaluate quality will make these efficient production decisions. A firm may produce a product line with different features (e.g. Lexus and Toyota) or the market may support two different firms (e.g. Starbucks and Dunkin'). The market is likely to work well when consumers are informed about quality and understand its value, because they will move their business to the product they prefer. However, the quality of many products and services is hard to evaluate; consider higher education, hospital services, or insurance. The impact of a social media service on the user's mental health is likewise hard for a user to evaluate. In the case of the most powerful digital platforms, another problem arises: not only are consumers uninformed, but they have no rival service to move to if they decide they are unhappy with quality. The only option for the consumer is low-quality digital product or abandoning the market entirely.

Because of its market power, a digital platform can degrade even observable quality to an inefficient level without losing sales. Quality is inefficiently low because, although consumers would value the improved product more than the cost of making the improvement, there is no rival to make a better offer, and so the consumer chooses the low-quality product over none at all. Robust competition prevents this inefficiency from occurring in other markets such as cars and coffee shops. This dynamic is the reason that suboptimally low quality is common in the case of monopoly power.²

The fact that the biggest digital platforms demonstrate entrenched market power and operate in concentrated markets is well known. In 2019, reports in the EU, the UK, and the US all made this point.³ Government antitrust enforcement began in Europe with a case against Google Search in 2010,⁴ and has continued with Google Android (2015),⁵ Apple (2020),⁶ Facebook (2022),⁷ Amazon (2022),⁸ and

2 In the context of digital platforms, this degradation of quality has been referred to colorfully as “enshittification.” Cory Doctorow, “Too big to care: Enshittification is a choice” (April 4, 2024), <https://doctorow.medium.com/https-pluralistic-net-2024-04-04-teach-me-how-to-shruggie-kagi-caaa88c221f2> (“Essentially, Google is saying that they don’t need to spend money on quality, because we’re all locked into using Google search. It’s cheaper to buy the default search box everywhere in the world than it is to make a product that is so good that even if we tried another search engine, we’d still prefer Google. This is enshittification. Google is shifting value away from end users (searchers) and business customers (advertisers, publishers and merchants) to itself.”).

3 Cremer *et al*, *Unlocking Digital Competition: Report of the Digital Competition Expert Panel* (March 2019), https://assets.publishing.service.gov.uk/media/5c88150ee5274a230219c35f/unlocking_digital_competition_furman_review_web.pdf; Stigler Committee on Digital Platforms; Final Report (Sep. 2019), <https://www.chicagobooth.edu/research/stigler/news-and-media/committee-on-digital-platforms-final-report>.

4 EC Antitrust: Commission probes allegations of antitrust violations by Google (Nov. 30, 2010), https://ec.europa.eu/commission/presscorner/detail/en/IP_10_1624.

5 EC Antitrust: Commission sends Statement of Objections to Google on comparison shopping service; opens separate formal investigation on Android (April 15, 2015), https://ec.europa.eu/commission/presscorner/detail/en/IP_15_4780.

6 EC Antitrust: Commission opens investigations into Apple’s App Store rules (June 16, 2020), https://ec.europa.eu/commission/presscorner/detail/es/ip_20_1073.

7 EC Antitrust: Commission sends Statement of Objections to Meta over abusive practices benefiting Facebook Marketplace (Dec. 19, 2022), https://ec.europa.eu/commission/presscorner/detail/en/ip_22_7728.

8 Antitrust: Commission accepts commitments by Amazon barring it from using marketplace seller data, and ensuring equal access to Buy Box and Prime (Dec. 19, 2023) https://ec.europa.eu/commission/presscorner/detail/en/ip_22_7777.

Google Ad Tech (2023).⁹ The United States was slower, but initiated litigation against Google Search and Meta in 2020,¹⁰ and followed up with Google Ad Tech and Amazon in 2023¹¹ and finally Apple in 2024.¹² All of these defendant platforms have market power and limited substitutes which indicates that the level of quality they provide is likely to be sub-optimal.

Cognitive limitations, asymmetric information, and behavioral biases contribute to the difficulty that end users have in evaluating safety and quality. The fact that the product is new is also a barrier to consumers being able to evaluate it the way they can with products they have consumed for many years from many suppliers. Any one consumer cannot experience the counterfactual (fewer ads, different content moderation, more choices) of the service they use, and therefore has a hard time knowing what attributes are missing, unlike sound systems or acceleration of a car. New products are also harder for governments to regulate since there is no body of literature alerting society to any problems, and there may be no established regulator with sectoral expertise.

Further, harms from low quality digital services, like degraded mental health, may be difficult to observe directly or tie to the design of a product. For example, it is difficult if not impossible to determine if a social media consumer is seeing posts purposefully pushed to increase engagement through anger, if the number of sponsored posts has gone up, or if posts on certain topics are being shown more because of an

9 EC Antitrust: Commission sends Statement of Objections to Google over abusive practices in online advertising technology (June 14, 2023), https://ec.europa.eu/commission/presscorner/detail/en/ip_23_3207.

10 DOJ, Justice Department Sues Monopolist Google For Violating Antitrust Laws (Oct. 20, 2020), <https://www.justice.gov/opa/pr/justice-department-sues-monopolist-google-violating-antitrust-laws>; FTC, FTC Sues Facebook for Illegal Monopolization (Dec. 9, 2020), <https://www.ftc.gov/news-events/news/press-releases/2020/12/ftc-sues-facebook-illegal-monopolization>; Compl., *FTC v. Facebook*, Case No. 1:20-cv-03590 (D.C. Cir. Jan 13, 2021), https://www.ftc.gov/system/files/documents/cases/051_2021.01.21_revised_partially_redacted_complaint.pdf.

11 Compl., *U.S. v. Google*, Case 1:23-cv-00108 (Jan. 24, 2023), available at https://www.justice.gov/d9/press-releases/attachments/2023/0%24/us_v_google_complaint_0.pdf; FTC, “FTC Sues Amazon for Illegally Maintaining Monopoly Power” (Sep. 26, 2023), <https://www.ftc.gov/news-events/news/press-releases/2023/09/ftc-sues-amazon-illegally-maintaining-monopoly-power>.

12 Compl., *U.S. v. Apple*, Case 2:24-cv-04055 (March 21, 2024), available at <https://www.justice.gov/opa/media/1344546/dl?inline>

algorithm designed to increase engagement. There is also harm from choice architecture that steers consumers to the option most profitable for the platform. Examples include use of personal data, automatically queuing videos and long, multi-step processes to cancel a service.¹³ The increasing use of sophisticated algorithms to help platforms design services and steer consumers exacerbates this problem: consumers “choose” a service they have not asked for and in many cases do not like, without fully realizing it.¹⁴

In addition, consumers may be fooled when a service has a monetary price of zero. A consumer who pays out of pocket for a poor meal in a restaurant will have a sense that they did not receive a good deal. But when a platform’s revenue comes from digital advertising, consumers often get the platform “for free.” This ostensibly “free” good may confuse the consumer into believing that they have not “paid” and therefore cannot demand reasonable quality. In fact, the consumer may have paid a high price by sharing their attention and personal data. The exercise of market power in this setting appears in more data extraction and lower quality services, rather than a higher monetary price.

The Digital Platform Business Model

Economists often describe digital technologies as having high fixed costs and low variable costs. Indeed, for digital services, marginal costs are often almost zero. When fixed costs are paid just once, regardless of the number of users, and each instance of use has such a low variable cost, the profits from output expansion are huge. Each new user or additional search/view brings in revenue from advertising while raising costs by very little. Even technology firms with relatively high variable costs—for example, hardware like the iPhone—can have gross margins of over 50% because of the significant software and ecosystem elements of the products.¹⁵

13 The FTC is taking action against Amazon for “sabotaging” users’ attempts to cancel their Prime memberships. Compl., *FTC v. Amazon*, 2:23-cv-0932 (W.D.Wa 2023); see <https://www.ftc.gov/news-events/news/press-releases/2023/06/ftc-takes-action-against-amazon-enrolling-consumers-amazon-prime-without-consent-sabotaging-their>.

14 Erik Hoel, “A.I.-Generated Garbage Is Polluting Our Culture,” *New York Times* (March 21, 2024), <https://www.nytimes.com/2024/03/29/opinion/ai-internet-x-youtube.html> (calling for a “Clean Internet Act”); Caroline Mimbs Nyce, “Google Is Playing a Dangerous Game with AI Search,” *The Atlantic* (March 24, 2024), available at <https://www.theatlantic.com/technology/archive/2024/05/google-search-ai-overview-health-webmd/678508/>.

We see the profitability of additional users every year in the profits earned by Google, Apple, Microsoft, and Meta, among others. These profits are driven by the cost structure just described combined with the enormous scale of these platforms. In 2022, Google had 4.3 billion users of its search engine and nearly \$60 billion in profits.¹⁶ Having already invested in crawling and indexing the web and developing a search algorithm, Google's incremental cost of a search is low. In 2022, Apple sold 232 million iPhones, which represented 50% of its revenue, and earned overall (from advertising, home services, and sales of other products like computers and headphones) \$97 billion in profits.¹⁷ Having built software for the iPhone and developed its ecosystem with accessories and services like memory and backup storage, Apple earns a gross margin around 40% on each handset (down from 50% when the iPhone was first introduced), while services have a gross margin of over 70%.¹⁸ Facebook and Instagram have approximately three billion monthly average users and earned Meta over \$23 billion in profits.¹⁹ Having built those social media sites and developed the algorithm that chooses the content to show users, Meta's cost of serving a new user, or an additional user for another few minutes, is low.

15 When the iPhone was first introduced in 2007, its profit margin was over 50%. See Greg Keiser, "Apple iPhone's Profit Margin Greater than 50%," *Computerworld* (July 23, 2007), <https://www.computerworld.com/article/2542380/apple-s-iphone-profit-margin-greater-than-50-.html>.

16 Google 10K (2002), <https://www.sec.gov/Archives/edgar/data/1652044/000165204423000016/goog-20221231.htm>; see also Alphabet Quarterly Earnings Press Releases, https://abc.xyz/assets/investor/static/pdf/2022Q3_alphabet_earnings_release.pdf?cache=4156e7f.

17 Derek Saul, "Apple Beats Estimates For Quarterly Profit, Sales Even As Annual Profits Slide," *Forbes.com* (Nov. 2, 2023), <https://www.forbes.com/sites/dereksaul/2023/11/02/apple-beats-estimates-for-quarterly-profit-sales-even-as-annual-profits-slide/>; David Curry, "Apple Statistics 2023," *Business of Apps* (Nov. 23, 2023), <https://www.businessofapps.com/data/apple-statistics/>

18 John Kotsier, "73%: This 1 Number Shows Why Apple's Future Is in Services Not Devices" *Forbes.com* (Feb. 2, 2024), <https://www.forbes.com/sites/johnkoetsier/2024/02/02/73-this-1-number-shows-why-apples-future-is-in-services-not-devices/>; see also Gregg Keiser, "Apple's iPhone profit margin greater than 50%," *ComputerWorld* (July 3, 2007), <https://www.computerworld.com/article/1578065/apple-s-iphone-profit-margin-greater-than-50.html>.

19 Mike Isaac, "Meta Posts 23% Growth as Ads Rebound, With Profit More Than Doubling," *New York Times* (Oct. 25, 2023), <https://www.nytimes.com/2023/10/25/technology/meta-facebook-quarterly-earnings.html>.

Now consider how top management of one of these firms analyzes a possible increase in the quality of the service. If an improvement can be implemented with a fixed cost, it will have a small impact on average cost because of the huge scale of the firm already. And the quality improvement—if users perceive it—will increase demand. Combined, it is easy to see that there is a set of parameters that deliver a net gain for the corporation from many quality improvements. By contrast, quality improvement that can only be achieved with a variable cost input will raise the cost of serving every user, and the number of users is enormous. This, holding all else equal, has much less promise of a net profit increase. In other words, if the product can be designed in a way that is “scalable,” i.e. all fixed cost and no variable cost, then growth and size are more profitable. When future sales have high margins, growth is more valuable, so future profits and the stock price will rise. The low marginal cost business model is therefore the first choice for the company, while it may not be for the regulator.

The Harms from Low Quality

Digital gatekeepers cause a variety of harms from inconvenience to deception to user safety. On one end of the spectrum, the overall lack of customer service options in digital services is an example of low quality. For example, an “FAQ” section of a website and an automated chatbot may not solve a user’s problem. At that point a consumer may want to reach out to customer service by phone or email. These solutions require humans rather than AI and therefore increase the marginal cost of serving users, so gatekeepers often do not invest in such solutions.

Reviews are another area where we see low quality that harms both consumers and small businesses. While online fraud and counterfeit products are a problem in general, fake online reviews are another manifestation of this hazard. Such reviews may not only be enthusiastic endorsements from fictional users, but also malicious or harmful attacks on rival businesses. Reviews created by non-users harm business owners and consumers alike; platforms have repeatedly sued companies that produce fake reviews.²⁰ When quality falls enough to threaten demand,

20 In 2015 and 2016, Amazon filed lawsuits against individuals and companies for writing fake reviews. Jackie Wattles, “Amazon sues more than 1,000 sellers of ‘fake’ product reviews,” *CNN.com* (Oct. 2015), <http://money.cnn.com/2015/10/18/technology/amazon-lawsuit-fake-reviews/>; Hillary Brueck, “Amazon Sues Again to Kill More Fake Product Reviews,” *Fortune*, (April 2016), <http://fortune.com/2016/04/26/amazon-more-fake-review-lawsuits/>.

a monopoly platform will invest in more and better scalable, fixed-cost tools.²¹ Despite these efforts, there are millions of errors as well as pieces of fake and fraudulent information negatively affecting both businesses and consumers.²² Processes and systems for dispute resolution would significantly improve the quality of online reviews and e-commerce sites, but such systems are costly to design, implement, and staff. To protect an innocent small business from a malicious attack that could drive away most of its sales, a human being will likely have to review the relevant evidence and then engage in an intervention.

Next, consider the harm to consumers from online ads. Though targeted ads can improve the user experience, they can also facilitate exploitation. And platforms that earn revenue from these ads lack sufficient incentive to ensure that the ads themselves are not harmful. Well-known problems include the direct marketing of dangerous products like online gambling²³ or fraudulent for-profit universities.²⁴

21 Google's Response to Request for Comments on the Reviews and Endorsements ANPR, P214504 (Jan. 9, 2023) at 8, https://downloads.regulations.gov/FTC-2022-0070-0034/attachment_1.pdf. ("Engineers and analysts closely monitor and study suspicious activities in ratings and reviews, and improve our models' precision and recall on a regular basis. To provide some more concrete examples, for Maps and the Play store, we plan to further expand our machine learning-based detection systems to combat emerging developments around 5-star review spikes. For Maps, our 2023 plans also include continued investments in proactive risk intelligence to detect abuse trends, identifying coordinated activity using both supervised and unsupervised models, and applying abuse detection advancements to remove older fake reviews. And for Shopping, our emerging plans for 2023 include advancing capabilities through machine learning to further increase our ability to identify and take down fake reviews and associated accounts.").

22 The UK Competition and Markets Authority has set requirements these large online platforms to enhance their systems for identifying, removing, and preventing such services. See Competition & Mkts. Auth., *Fake and Misleading Online Reviews Trading*, GOV.UK (Apr. 9, 2021), <https://www.gov.uk/cma-cases/fake-and-misleading-online-reviews>; see also *Ariz. et. al. v. Meta, et. al.*, Case No. 4:23-cv-05448, N.D. Cal. (Oct. 24, 2023), <https://coag.gov/app/uploads/2023/10/23.10.24-Doc.-1-Complaint-People-v.-Meta-23cv05448.pdf>.

23 The link between gambling advertising and gambling addiction is well-documented. See, e.g., André Syvertsen et. al., "Relationships Between Exposure to Different Gambling Advertising Types, Advertising Impact and Problem Gambling," *Journal of Gambling Studies* (2022) 38:465–482, This will only get worse since sports betting is now legal in thirty states and sports betting apps are working hard to normalize the use of their products. See Jack O'Donnell, "The Ugly Truth Behind All Those Fun Gambling Ads," *Politico* (May 2022), <https://www.politico.com/news/magazine/2022/02/13/ugly-truth-behind-fun-gambling-ads-00008380>.

24 David Halperin and the Project on Predatory Student Lending, "Scam Websites, Promising COVID-19 Advice, Steer Students to Predatory Colleges," *COVID College Con*

Vulnerable consumers like depressed teenagers can be sold products they do not want, while the targeting process identifies unsophisticated consumers who are shown ads for high return financial assets.

Over ninety percent of online ads are “programmatic digital display advertising,” meaning that the advertising process (including to whom it is shown, when, where, and how often, as well as how much companies pay) is completely automated.²⁵ New dangerous products can be matched with target audiences by the algorithm without oversight from human beings. It remains difficult in the United States for either publishers or brands to learn whether their ads were being shown to the intended audience in a safe way.

Harms also come in the form of higher prices. While many digital platforms do not charge consumers a monetary price, they extract payment instead from their data and their attention: the transaction is a barter. We know that one harm from monopoly is a price above the competitive price, and we can carry that logic over to this setting by converting what the user barter into its money value. The net “price” of the service is any money payment (perhaps zero) plus the value of the personal data gathered, plus the value of attention combined with the personal data. The sum of these components constitutes the monopoly price paid by the end user. The increment above the competitive price is a direct harm. Advertisers or other business users who pay the platform a monetary price for advertising or other services likewise face a monopoly markup that is a harm.

For monopoly digital platforms, the refusal to improve quality is not only a cost-saving measure, but a strategy to increase profits from other business lines at the direct expense of the consumer experience. For example, the Federal Trade Commission’s Complaint against Amazon explains that Jeff Bezos instructed executives to accept more junk advertisements (known internally as “defects”) because the advertising revenue to Amazon is more than the sales it loses from the obvious degradation in search quality and higher prices.²⁶

(April 15, 2020), <https://www.republicreport.org/2020/scam-websites-promising-covid-19-advice-steer-students-to-predatory-colleges/>.

25 Megan Yuen, “Programmatic Digital Display Advertising in 2022: Ad spend, formats, and forecast,” *Inside Intelligence* (May 11, 2023), <https://www.insiderintelligence.com/insights/programmatic-digital-display-ad-spending/>.

26 *FTC. v Amazon* Compl. ¶ 5, *supra* n. 19.

Even when the ads themselves are not exploitative, because they are not the reason the user comes to the platform, watching ads rather than interacting with friends lowers the quality of the experience. Further, this seemingly minor inconvenience—having to view advertising to access a service with a monetary price of zero—is for the gatekeeper an incentive to design a product in a way that can (and has) actively harmed users. The business model of selling ads means profit is higher if consumers spend a longer time on the platform. The longer users stay, the more ads they see, and the more profit the platform earns. It is not surprising, therefore, to learn that gatekeepers design ad-supported social media to be addictive.²⁷ And an addictive product is not a safe product by definition.

This drive towards increased individual consumption means, of course, that both individual and societal harms are magnified, spread, and perpetuated by social media.²⁸ This lack of digital quality—in terms of lack of safety for individuals and communities—has taken time for consumers and regulators to appreciate both because the business model of low quality took time to evolve, and then additional time passed before its impact became measurable. But now, thanks to the work of social scientists, lawyers, policymakers, and whistleblowers, the threats to safety and public health posed by digital platforms are becoming clearer.²⁹ The Center for Humane Technology identified this problem early on; since then there has been a large amount of academic research

27 See, Compl., *Ariz. et. al. v. Meta, et. al.*, Case No. 4:23-cv-05448, N.D Cal (Oct. 24, 2023), <https://coag.gov/app/uploads/2023/10/23.10.24-Doc.-1-Complaint-People-v.-Meta-23cv05448.pdf>; Compl., *New York v. TikTok et al*, 452749/2024 (New York, October 8, 2024), https://ag.ny.gov/sites/default/files/court-filings/3_redacted_complaint_signed-003_3.pdf (one of fourteen separate suits).

28 James N. Rosenquist, Fiona M. Scott Morton & Samuel N. Weinstein, “Addictive Technology and Its Implications for Antitrust Enforcement,” 100 N.C. L. Rev. 431 (2022), available at <https://scholarship.law.unc.edu/nclr/vol100/iss2/4>.

29 Paul Mozer, “Genocide Incited on Facebook, With Posts From Myanmar’s Military,” *New York Times* (Oct. 15, 2018), <https://www.nytimes.com/2018/10/15/technology/myanmar-facebook-genocide.html>; Order re: Motion to Dismiss at 14, *In re: Social Media Adolescent Addiction Personal Injury Products Liability Litig.*, MDL No. 3047, <https://cand.uscourts.gov/in-re-social-media-adolescent-addiction-personal-injury-products-liability-litigation-mdl-no-3047/>; Michael Lavi, “The Good, The Bad, and the Ugly Behavior,” 40 *Cardozo Law Rev.* 259, <https://cardozolawreview.com/the-good-the-bad-and-the-ugly-behavior/>; see also Chas Newkey-Burden, “Does TikTok have a ‘Nazi problem?’” *The Week UK* (July 31, 2024), <https://theweek.com/tech/does-tiktok-have-a-nazi-problem>.

studying the specific impact of product design, many principles of which have made their way into the complaints against Meta and TikTok.³⁰ For example, the states have accused Meta of designing “psychologically manipulative product features to induce young users’ compulsive and extended use” of Instagram, and specifically call out design features like addictive, including alerts and infinite scroll.³¹ Whistleblowers, including most notably Frances Haugen, have noted that digital platforms are aware of the addictive nature of their technology, and continue to harness it for profit, rather than improve the quality of their products to keep its users safe.³² Likewise, thirteen states and the District of Columbia recently sued TikTok for unlawfully promoting “features [that] exploit children’s underdeveloped psychological and neurological controls to lock young users into cycles of excessive and unhealthy usage of social media.”³³ As one employee stated regarding Meta: The “overall company goal is total teen time spent.”³⁴ Thus, the mission of the platforms and the interest of consumer health and safety are in direct conflict. This observation makes it clear that the solution to the degradation of digital quality will not come from digital gatekeepers.

Consumer safety has rightly become a focus of public concern. The tools available to governments to increase safety include general prohibitions against fraud and deception, private lawsuits by harmed parties against digital platforms, and sectoral regulators that have the power to issue and enforce specific rules. In the United States, this last option for regulation of digital platforms is not available. One of the reasons digital services do not provide the quality consumers have come to expect from other products and services is that there is no regulator of safety like there is for automobiles, hospitals, banks, and chemical

30 The Center for Humane Technology, which produced the documentary *The Social Dilemma*, can be found at <https://www.humanetech.com/>.

31 See *supra* n. 27.

32 Cecilia Kang, “Facebook Whistle-Blower Urges Lawmakers to Regulate the Company,” *New York Times* (Oct. 5, 2021), <https://www.nytimes.com/2021/10/05/technology/facebook-whistle-blower-hearing.html>.

33 See Compl., *New York v. TikTok*, *supra* n. 27.

34 Natasha Singer, “How Mark Zuckerberg’s Meta Failed Children on Safety, States Say,” *New York Times* (June 22, 2024), <https://www.nytimes.com/2024/06/22/technology/zuckerberg-instagram-child-safety-lawsuits.html>; see also Statement of Commissioner Alvaro M. Bedoya, Federal Trade Commission (July 9, 20204) (detailing mental health harms), available at https://www.ftc.gov/system/files/ftc_gov/pdf/subcommittee-testimony-alvaro-bedoya.pdf.

manufacturers.³⁵ In contrast, European legislators recognized this problem, leading to the Digital Safety Act and other laws specifically create rules to make digital businesses safer and more competitive for both individual users and society.

Historical Framing around Resistance to Regulation

Digital platforms typically form and grow by using a fixed-cost solution (software) to create and adjust the quality of the user experience. As noted above, government and society may not find that quality is high enough with this approach. Once those platforms achieve a level of impact and market dominance that brings with it social responsibility, functioning legislatures are likely to pass regulations mandating higher operating standards. This may require the platform to use other tools to raise quality and safety such as the time and effort of workers. And those requirements may lower profitability, as has happened with generations of similar businesses in past generations. As a legal matter, a platform is not entitled to the same profitability and margins it enjoyed before its consumers became aware of harm to safety and competition, so it must adhere to any new rules society adopts.

Because of the likely impact on profits, platforms use their political power to fight such quality regulation. One common approach is to claim that that regulation will destroy the product and return users to a pre-technical age. Consider an analogy to the history of seatbelts in the U.S.: regulation was needed to make them available and commonly used. In the 1950s, Ford offered cars with lap belts for an extra \$27, but only 2% of consumers purchased them.³⁶ The three-point harness we know today was developed in the 1960s, but automobiles were not required to offer them, and passengers were not required to wear them even if they were offered. In 1966, The National Traffic and Motor Vehicle Safety Act was passed (*Unsafe at Any Speed* was published in 1965), which

35 See generally Tom Wheeler, Phil Verveer, and Gene Kimmelman, New Digital Realities; New Oversight Solutions (Aug. 20, 2020), available at <https://shorensteincenter.org/new-digital-realities-tom-wheeler-phil-verveer-gene-kimmelman/>; see also, for example, NHTSA Report Number DOT HS 809 835, Cost Per Life Saved By The Federal Motor Vehicle Safety Standards (Dec. 2004), <https://icsw.nhtsa.gov/cars/rules/regrev/evaluate/809835.html> (noting that Federal Motor Vehicle Safety Standards added \$839 to the cost of each car in 2002).

36 Daniel Ackerman, "Before face masks, Americans went to war against seat belts," *Business Insider* (May 2020), <https://www.businessinsider.com/when-americans-went-to-war-against-seat-belts-2020-5>.

mandated updated safety standards and created the National Traffic and Highway and Safety Administration to oversee them.³⁷ In the 1980s, the automobile industry continued to lobby against any government mandate to provide safety features in cars, claiming that installing them was too costly and only marginally effective.³⁸ They also claimed that consumers would not comply with seatbelt laws or wear the seatbelts if they were offered.

Cut to 2023, and the U.S. Department of Transportation and N.T.H.S.A. mandate myriad safety features in cars including crumple fronts, airbags, and roll bars. Seatbelt compliance is over 90%.³⁹ Regulation did not return consumers to using a horse and buggy, but many fewer Americans die in car crashes per mile driven than in the 1980.⁴⁰ Cars stayed as part of a modern convenient lifestyle, but they became safer. We have seen over time, despite the industry's initial resistance, that consumers prefer their cars to have these safety features so that they and their families are less likely to be harmed while using the product. Stop signs, crosswalks, and drivers' licenses are other regulations that enhance the safety of a community full of cars, and analogies to these regulations need to be adopted in the digital area as well.

The creation of the Consumer Financial Protection Bureau followed a similar plot. It had become clear to consumers and regulators alike that certain financial instruments were unsafe—akin to selling a car with no airbags. Financial safety standards were needed to prevent exploitative mortgages, hidden fees and the like, and these were imposed by government.⁴¹ New regulations brought financial products

37 Ralph Nader, *Unsafe at Any Speed: The Designed-In Dangers of the American Automobile* (1965); see also Christopher Jensen, "50 Years Ago, 'Unsafe at Any Speed' Shook the Auto World," *New York Times* (Nov. 27, 2015), <https://www.nytimes.com/2015/11/27/automobiles/50-years-ago-unsafe-at-any-speed-shook-the-auto-world.html>.

38 Leo C. Wolinsky, "Big Lobbies Clash in Fight on Seatbelts", *Los Angeles Times* (Feb. 1985), available at <https://www.latimes.com/archives/la-xpm-1985-02-19-mn-546-story.html>.

39 Traffic Safety Marketing, *National Enforcement Mobilization* (May 2023), <https://www.trafficsafetymarketing.gov/get-materials/seat-belts/click-it-or-ticket/national-enforcement-mobilization>.

40 Insurance Institute for Highway Safety: Fatality Facts, <https://www.iihs.org/topics/fatality-statistics/detail/yearly-snapshot> (In 1980, there were 3.3 deaths per 100 million miles drive; in 2022 that number was 1.3.)

41 Elizabeth Warren, "Unsafe at Any Rate," *Democracy J.* (Summer 2007), <http://democracyjournal.org/magazine/5/unsafe-at-any-rate/>; Donald C. Lampe and Ryan J.

in line with other services that rely on quality controls to function. For example, nursing homes are required to adhere to certain staffing levels and other levels of quality that may be hidden from the consumer (the decisionmaker who is often not the patient). Hospitals must adhere to safety protocols that are similarly difficult for patients to observe. What digital platforms have in common with these other industries is the difficulty for the individual consumer to assess the quality of the product or service—and thus the need for outside regulations to improve safety.

Digital platforms often frame the debate about regulation of online safety as if the choice is between the existing car without a seatbelt or the horse and buggy. This “all or nothing” fallacy only works if consumers lack the imagination to demand a car with a seatbelt or a social media platform that is safe for children. Being pro-safety is not the same as being anti-technology; it is making a demand about the design of the new technology. Similar platform framing appears in other arguments. A platform may argue that a great majority of users surveyed say that the platform’s current products save them many hours of time per month. Or that a great majority of users said they would buy the platform’s products again if offered them. The implicit comparison in these remarks is between regulating the digital service *or not having it at all*. These false choices offer a framing that distracts from the real, and difficult, policy tradeoffs faced in regulation: cost versus safety.

Quality and Safety are Costly

The actions demanded by digital platform regulators are likely to be those that require a variable cost expenditure by the firm because, as argued above, these are the actions the firm has least incentive to undertake voluntarily. A regulation that causes a variable cost per user risks reducing profits a great deal even if there is a positive effect on demand. And because of the market power of platforms, the impact on demand from increasing quality may be small because all consumers are already using the platform.

The effect of additional expenditure by digital platforms to improve quality is illustrated by the differences between the Apple Store and the Google Play Store. The former has always used human moderation

Richardson, “The Consumer Financial Protection Bureau at Five: A Survey of the Bureau’s Activities,” 21 *N.C. Banking Inst.* 85, 91 (2017), <https://scholarship.law.unc.edu/ncbi/vol21/iss1/9/>.

and more stringent requirements for the applications it offers. Apple describes its store as “highly curated,” and promises that the quality control it places on applications results in an app store that is the “safest for consumers around the world.”⁴² It is largely accepted that the Apple App store does indeed have less malware and a better user experience than the Google Play Store (though it remains imperfect).⁴³ By contrast, Google has more than double the number of apps on its store and a greater share of malicious or dangerous apps. There is a widespread and entrenched consumer perception that Apple is “safer,” which may be due to Google’s historic aversion to human reviewers.⁴⁴ Google has only recently announced that it will adopt an improved, but still automated, process for spotting malware and has touted a “combination of human and automated evaluation to review apps and app content.”⁴⁵

In jurisdictions that have required digital services to improve safety, platforms demonstrate that they are perfectly able to achieve mandated goals. Consider Facebook’s operations in Germany, where Nazi content is illegal and a platform found with such posts faces large fines.⁴⁶ Facebook deploys over one-thousand content moderators for its German site. Indeed, though Germany has 43 million, or around 1%, of monthly Facebook users, it has a much larger share of content moderators.⁴⁷ Indeed, if we use the 15,000 moderators reported in

42 See Apple Developer Landing Page, <https://developer.apple.com/app-store/review/guidelines/>.

43 Braden Newell, “Here’s why Apple’s App Store is better than Google’s Play Store,” *MobileSyrup* (March 9, 2023), <https://mobilesyrup.com/2023/03/06/why-apples-app-store-is-better-than-googles-play-store/>

44 Zach Doffman, “Latest Android Malware Report Shows Gap To iPhone Remains,” *Forbes.com* (June 9, 2024), <https://www.forbes.com/sites/zakdoeffman/2024/06/01/google-android-warning-shows-why-apples-iphone-is-impossible-to-beat/>.

45 See Google Play Developer Landing Page, <https://support.google.com/googleplay/android-developer/answer/15225428?hl=en>; Sarah Perez, “Google Play tightens up rules for Android app developers to require testing, increased app review,” *TechCrunch.com* (Nov. 9, 2023), <https://techcrunch.com/2023/11/09/google-play-tightens-up-rules-for-android-app-developers-to-require-testing-increased-app-review/>.

46 Martin Coulter and Hakan Ersen, “Social media moderators in Germany seek improved working conditions in battling toxic content,” *Reuters* (June 6, 2023), <https://www.reuters.com/technology/social-media-moderators-urge-german-lawmakers-tackle-exploitative-working-2023-06-14/>. Third party moderators in Germany have been pushing for increased labor protections. Content Moderators Manifesto, [foxglove.org](https://www.foxglove.org) (June 14, 2023), <https://www.foxglove.org.uk/2023/06/14/moderators-germany-manifesto-bundestag/>.

47 Katrin Benhold, “Germany Acts to Tame Facebook, Learning from Its Own History

2020 as an estimate of the 2018 number, Germany would have about seven times more Facebook moderators per user than other countries. This data point demonstrates that Facebook's marginal costs are higher where it produces a higher quality product. The solution that we see Facebook deploy when it is *required* to provide quality is a combination of both scalable code that works imperfectly *as well as* expensive human moderators. This method of raising quality appears to work in the case of app stores also.

Frances Haugen explained that preventing violence in countries around the world would require that Meta develop safety systems in different languages.⁴⁸ But as of 2021 in Afghanistan, for example, Facebook could not translate any posts into Dari and Pashto, the country's two main languages, leaving the country devoid of any human content moderators or even any automatic filters.⁴⁹ As of 2020, Facebook had 15,000 third party content moderators. Based on the rough calculations above, to moderate posts at the quality level achieved in Germany, Meta would need a seven-fold increase in content moderators, and obviously more than that if it starts at zero in a country or language. Moreover, the moderators will be expensive, even if they are low skill workers, because of the dangerous nature of the job. For example, re-training due to high turnover, or regularly rotating workers out of content moderation and onto other tasks may be necessary, as well as bearing above average costs of mental health care.⁵⁰ The relevant compensation,

of Hate," *New York Times* (May 19, 2018), <https://www.nytimes.com/2018/05/19/technology/facebook-deletion-center-germany.html>.

48 Adam Smith, "Facebook whistleblower says riots and genocides are the 'opening chapters' if action isn't taken," *Independent* (Oct. 25, 2021), <https://www.independent.co.uk/tech/facebook-whistleblower-zuckerberg-frances-haugen-b1944865.html>.

49 Isabel Debre and Fares Akram, "Facebook's language gaps let through hate-filled posts while blocking inoffensive content," *Los Angeles Times* (Oct. 25, 2021), <https://www.latimes.com/world-nation/story/2021-10-25/facebook-language-gap-poor-screening-content>.

50 Martin Coulter and Hakan Ersen, "Social media moderators in Germany seek improved working conditions in battling toxic content," *Reuters* (June 6, 2023), <https://www.reuters.com/technology/social-media-moderators-urge-german-lawmakers-tackle-exploitative-working-2023-06-14/>; Bobby Allyn, "In Settlement, Facebook to Pay \$52 Million To Content Moderators With PTSD," *NPR.org* (May 20, 2020), <https://www.npr.org/2020/05/12/854998616/in-settlement-facebook-to-pay-52-million-to-content-moderators-with-ptsd>; Casey Newton, "The Trauma Floor: The Secret Lives of Facebook Moderators in America," *Theverge.com* (Feb. 25, 2019), <https://www.theverge.com/2019/2/25/18229714/cognizant-facebook-content-moderator-interviews->

training and protection will be costly, particularly in jurisdictions where labor is organized.⁵¹ (In other jurisdictions, of course, the costs will be externalized, harming workers and consumers alike.)

Platforms tout the use of AI for content moderation (Meta celebrated its open-source tool to “help [...] keep platforms free of terrorist content”⁵²), but it is straightforward to observe that those tools are not achieving an acceptable level of safety. In the context of content regulation, that code may catch—as Mark Zuckerberg estimated in 2021—95% of the removable posts.⁵³ The problem, of course, is the platform’s scale means that a 5% error rate will omit hundreds of millions of posts that qualify for take-down.⁵⁴ Platforms will likely argue that this is old news, and because of the rapidly improving and expanding capabilities of AI, content moderation will continue to get cheaper. Indeed, AI may be part of a solution, if it becomes capable of

trauma-working-conditions-arizona; Katrin Benhold, “Germany Acts to Tame Facebook, Learning from Its Own History of Hate,” *New York Times* (May 19, 2018), <https://www.nytimes.com/2018/05/19/technology/facebook-deletion-center-germany.html> (describing psychological effects on the workers in the German deletion center, who suffer from breakdowns, nightmares, and have weekly group sessions with psychologists). In 2020, Facebook paid 52 million to settle a lawsuit brought by content moderators; A Kenyan court recently ordered that Facebook was responsible for the psychological harms to its content moderators. See Caroline Kimeu, “‘A watershed’: Meta ordered to offer mental health care to moderators in Kenya,” *The Guardian* (June 7, 2023), <https://www.theguardian.com/global-development/2023/jun/07/a-watershed-meta-ordered-to-offer-mental-health-care-to-moderators-in-kenya>.

51 See Thomas Stackpole, “Content Moderation Is Terrible by Design: A conversation about how to fix the front lines of the internet,” *Harvard Business Review* (Nov. 9, 2022), <https://hbr.org/2022/11/content-moderation-is-terrible-by-design>; Paul M. Barrett, *It’s Past Time to Take Social Media Content Moderation In-House* (Jan. 18, 2023), <https://techpolicy.press/its-past-time-to-take-social-media-content-moderation-in-house/>.

52 Press Release, “Meta Launches New Content Moderation Tool as It Takes Chair of Counter-Terrorism NGO” (Dec. 13, 2022), <https://about.fb.com/news/2022/12/meta-launches-new-content-moderation-tool/>.

53 Charlotte Jee, “Facebook needs 30,000 of its own content moderators says a new report,” *MIT Technology Review* (June 8, 2020), <https://www.technologyreview.com/2020/06/08/1002894/facebook-needs-30000-of-its-own-content-moderators-says-a-new-report/>; Paul M. Barrett, “Who Moderates the Social Media Giants? A Call to End Outsourcing,” NYU Stern Center for Business and Human Rights (June 2020), available at https://static1.squarespace.com/static/5b6df958f8370af3217d4178/t/5ed9854bf618c710cb55be98/1591313740497/NYU+Content+Moderation+Report_June+8+2020.pdf.

54 In 2022, Facebook took action against 5.7 billion pieces of content for violating its anti-spam rules. Transparency Center, Spam, Meta, <https://transparency.fb.com/policies/community-standards/spam>.

improving quality to an acceptable level. However, regulators cannot wait for that time. AI does not do a good enough job moderating content; it makes mistakes, hallucinates, and entrenches bias.⁵⁵ And just as high-quality content moderation depends on human beings, AI depends on humans to train it at a massive scale.⁵⁶ There is no way to remove the cost of human beings from the equation.

What users and regulators must recognize is relatively simple: apart from thorny questions about *how* to make digital platforms safe, requiring safety is a political fight because monopoly platforms perceive it to be so expensive.⁵⁷ A company producing a valuable product in a competitive industry would not have this reaction. Its profits would be low due to competition. When all firms in the industry adopted the safety requirements of the regulator, all their costs would go up together. Prices would have to rise to cover the higher costs, but competition among firms would keep margins as low as possible and the shareholders of these firms would be largely unaffected. By contrast, gatekeeper platforms have substantial market power and therefore have high margins and large profits. Economic theory teaches that a firm with market power tends to pass through only part of its incremental costs, though what fraction is difficult to predict. So from the monopolist's point of view, higher quality can be a significant profit sacrifice.

55 Isobel Asher Hamilton, "Facebook AI cannot solve moderation problems," *Business Insider* (June 15, 2022), <https://www.businessinsider.com/meta-facebook-ai-cannot-solve-moderation-frances-haugen-daniel-motaung-2022-6>; see also MIT Sloan School of Management, "When AI Gets It Wrong: Addressing AI Hallucinations and Bias" <https://mitsloanedtech.mit.edu/ai/basics/addressing-ai-hallucinations-and-bias/>; New America Foundation, "The Limitations of Automated Tools in Content Moderation," <https://www.newamerica.org/oti/reports/everything-moderation-analysis-how-internet-platforms-are-using-artificial-intelligence-moderate-user-generated-content/the-limitations-of-automated-tools-in-content-moderation/>.

56 See Josh Dzeiza, "AI Is a Lot of Work: As the technology becomes ubiquitous, a vast tasker underclass is emerging—and not going anywhere," *New York Magazine* (June 30, 2023), <https://nymag.com/intelligencer/article/ai-artificial-intelligence-humans-technology-business-factory.html>.

57 See Jack Balkin, "How to Regulate (and Not Regulate) Social Media," Knight First Amendment Institute at Columbia University (March 25, 2020) ("[T]he need for content moderation creates problems of scale. Content moderation that is simultaneously quick, accurate, and at scale is hard to achieve. Accuracy requires increasing the number of moderators (either through hiring or contracting out to other firms) at numbers far greater than most social media companies would like; it also requires treating content moderators much better than they are currently treated by their employers."), <https://knightcolumbia.org/content/how-to-regulate-and-not-regulate-social-media>; see also Sarah T. Roberts, *Behind the Screen: Content Moderation in the Shadows of Social Media* (Yale University Press, 2019).

The Way Forward: Regulation in the EU

Digital quality is expensive. However, consumers expect quality and they expect their governments to keep citizens safe. It is time to require that digital products adhere to appropriate quality and safety levels.

In Europe, the DMA and the DSA show a way forward. The DSA requires designated platforms (those with over 45 million EU users, which include, for example, Meta and TikTok) to engage in more rigorous content monitoring or face significant financial penalties.⁵⁸ The DSA prohibits platforms from targeting online ads to minors using any data. It also prohibits platforms from using sensitive data (such as health information, political views, sexual orientation, or ethnicity) to target ads, no matter the age of the consumer. The DSA allows targeting on other bases, but platforms are obligated to more clearly label advertisements and inform consumers who placed the ad, who paid for it, and on what basis the consumer was targeted to be shown the ad.⁵⁹ Platforms must respond to inquiries about content and users, publish reports about transparency, inform users about content moderation, and build mechanisms for users to notify platforms about content. The DSA does not impose specific requirements about what types of content must be removed, but rather imposes a structure and process on platforms. The DSA also addresses quality and fraud concerns about online marketplaces, requiring increased vetting of vendors and transparency to consumers. The safety provisions aimed at social media platforms are intended to be responsive to world events.⁶⁰

58 See The Digital Services Act and the Digital Markets Act—A forward-looking and consumer-centred perspective, Workshop Proceedings (June 2021), available at <https://www.europarl.europa.eu/cmsdata/237109/QA0221821ENN.pdf>.

59 EU, The impact of the Digital Services Act on digital platforms (Nov. 2023), <https://digital-strategy.ec.europa.eu/en/policies/dsa-impact-platforms>. The DSA allows targeting on other bases, but platforms are obligated to more clearly label advertisements and inform consumers who placed the ad, who paid for it, and on what basis the consumer was targeted to be shown the ad.

60 The Digital Services Act and the Digital Markets Act—A forward-looking and consumer-centred perspective, Workshop Proceedings (June 2021), available at <https://www.europarl.europa.eu/cmsdata/237109/QA0221821ENN.pdf>. Recently, the EU demanded that Meta and TikTok specifically provide more information about the measures it has taken to “protect the integrity of elections and following the terrorist attacks across Israel by Hamas, in particular with regard to the dissemination and amplification of illegal content and disinformation.” EU, Commission sends request for information to Meta under the Digital Services Act (Oct. 19, 2023), https://ec.europa.eu/commission/presscorner/detail/en/mex_23_5145.

The DMA requires designated gatekeepers to take certain steps which will, over time, improve the quality of the consumer experience.⁶¹ Data portability, for example, will allow consumers to more easily move their business from a service with lower quality to one with higher quality. Interoperability will allow rival apps and app stores to compete with gatekeeper products on a level playing field, which will provide consumers with more options. Advertising transparency will allow all parties to more clearly observe what consumers experience in ad markets.

This regulation will be expensive no doubt. The ability of platforms to engage in meaningful, nimble content moderation will require spending more on safety and quality to improve the algorithms used, deliver on transparency obligations, develop meaningful reporting procedures, and—most likely—employ human beings at some stages of the process.

The Way Forward—Lack of Regulation in the US

There is no regulator for digital safety in the United States. Instead, platforms that cause harm are subject to lawsuits alleging violations of existing laws from private plaintiffs, multiple state attorneys general, and school districts. These private and public plaintiffs accuse platforms of violating state and federal consumer protection law, competition law, privacy law, and common law torts.⁶² These efforts appear to be gaining momentum: in October 2023, thirty-four states sued Meta for targeting its addictive products to children and teenagers. The following month, a Judge in the Northern District of California allowed plaintiffs' negligence claims against defendants including Facebook, Alphabet, Meta, TikTok, and YouTube to proceed with respect to lack of parental control, not labeling filtered content, making it challenging for users to delete their accounts, and not providing protocols for blocking and reporting predatory accounts.⁶³

61 Cristina Caffarra and Fiona Scott Morton, How Will the Digital Markets Act Regulate Big Tech, *ProMarket* (Jan. 11, 2021), <https://www.promarket.org/2021/01/11/digital-markets-act-obligations-big-tech-uk-dmu/>; Alexandre de Street et. al, Enforcing the Digital Markets Act, (Jan. 5, 2023) available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4314848.

62 See, e.g., *Ariz. et. al. v. Meta, et. al.*, Case No. 4:23-cv-05448, N.D. Cal. (Oct. 24, 2023), <https://coag.gov/app/uploads/2023/10/23.10.24-Doc.-1-Complaint-People-v.-Meta-23cv05448.pdf>.

63 Order re: Motion to Dismiss at 14, *In Re: Social Media Adolescent Addiction Personal Injury Products Liability Litig.*, MDL No. 3047, <https://cand.uscourts.gov/in-re-social-media-adolescent-addiction-personal-injury-products-liability-litigation-mdl-no-3047/>.

Though these cases suggest a potential for regulating the safety hazards caused by social media platforms, litigation has obvious drawbacks, because it is by definition *post facto*. And though there is apparent bipartisan interest in legislative solutions,⁶⁴ policy makers are having trouble deciding on how congress can regulate without causing the Supreme Court to decide the resulting law has run afoul of Section 230 or the First Amendment. In a pair of cases brought by NetChoice against Texas and Florida, the Supreme Court recently remanded to the states for further factual development the question of whether state laws that seek to control platforms' content moderation policies and design—notably, not to increase safety, but for the purported purpose of increasing a diversity of voices on the internet—violate the First Amendment. The Supreme Court seemed to suggest in its opinion that content moderation algorithms could be considered speech.⁶⁵ This creates a conundrum: If platforms may be sued by consumers who were harmed by dangerous social media, and at the same time the state prohibits the platform from making its service safe by forbidding government rules that impact content moderation, how will the platform continue to operate?

Given the central role these platforms play in every aspect of modern life, it seems unlikely that U.S. courts would follow that logical path to its conclusion – the closure of these digital platforms. Courts are likely to choose either to let platforms continue to harm consumers, or to allow private businesses to moderate the nature and reach of the content on their own services. Based on the evidence of significant harm from digital platforms today, citizens will certainly be better off with the latter.

There is a way forward: the U.S. can and should create a digital regulator. This is the approach being used by the European Parliament, which recognizes and addresses the tremendous asymmetry of information, resources, and the ability to study impacts of different policies between a platform and a regulator. The burden is on the platform itself to provide evidence to a regulator that its product is safe. This shift keeps the regulator away from interfering with—either

64 See Sabine Neschke, "Children's Federal Online Safety and Privacy: A Tentative Path for Congress," *Bipartisan Policy Center* (Aug. 9, 2023), <https://bipartisanpolicy.org/blog/childrens-federal-online-safety-privacy-tentative-path-for-congress/>.

65 *NetChoice v. Paxton*, U.S. No. 22-555, <https://www.supremecourt.gov/docket/docketfiles/html/public/22-555.html>; Slip. Op. October 2023, available at https://www.supremecourt.gov/opinions/23pdf/22-277_d18f.pdf.

in reality or in appearance—the platform’s First Amendment rights. The platform is given the power to decide how it wants to achieve the regulator’s quality and safety standards: with expensive human moderators, AI, its own content rules, a system of blocking certain users, or other choices.⁶⁶

Because platforms are notoriously effective at sidestepping regulations, and because they have every economic incentive to block them from being implemented in the first place, imposing such requirements through a digital regulator will require significant political will. Historically, regulated firms oppose regulation on the grounds that it will increase costs. Because consumers do not pay a monetary price for many digital services today, this argument is harder for platforms to adopt. This is why we see platforms deploy the horse and buggy narrative. But the goal of regulation is to ensure that the benefits to consumers are higher than the costs; society will pay the higher costs but be better off with the outcome, just as they are with their cars. The key realization is that digital platforms are *currently* not without cost; what needs to change is the opacity of both the size of the cost to individuals and communities, and who bears it: the consumers or the platform.

66 Of course, it is impossible to sidestep First Amendment issues altogether. Last term, the Supreme Court ruled that government officials can be held liable for violating the First Amendment in some cases for blocking social media users (though, notably, this case implicated individual blocking decisions, not a platform’s own algorithm or content moderation). See *Lindke v. Freed*, 601 U. S. ____ (2024) *per curiam*; *O’Connor-Ratcliff v. Garnier*, 601 U.S. ____ (2024).

PART IV.

Competition between Platforms

Given that we have so many dominant platforms that lack competitors, stimulating entry is of the first importance. Markets with strong network effects tend to reinforce dominance, raising the barriers to entry and making it difficult to sustain perfectly competitive markets. In the rare instance when a new entrant gets a foothold, it can be a source of competition to dominant firms. Dominant firms, however, have many tools and enormous incentives to impede the ability of such entrants to compete. Tactics can include raising entrants' costs of business, bundling goods and services, and inhibiting agreements between entrants and platform users. Policy makers must be particularly sensitive to these behaviors in order to protect entrants from exclusion by the incumbent and encourage new competition.

Chapter 10.

Improving the Contestability of E-Commerce in Two Jurisdictions: The Amazon Case

December 4, 2023*

Executive Summary

Antitrust cases against Amazon in the United States reveal that the e-commerce giant has developed algorithms that mimic price protection contracts called MFNs (from most-favoured nations, a term borrowed from international trade), despite the company saying publicly that it ended the contracts themselves years ago.

MFNs are well known in antitrust enforcement for their anticompetitive effects: higher prices and less entry. The complaints describe how Amazon demotes merchants from its coveted Buy Box if Amazon finds a lower price on a rival e-commerce site, creating an incentive for merchants to set higher prices on rival sites.

The European Union, the Digital Markets Act bans such contracts. This would be a good remedy for the US as well as it would restore competition with minimal harmful side effects. The US complaints describe a different scheme that penalises brands if Amazon must reduce its retail prices to match a rival retailer. The EU may have to

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pursue this conduct under Article 102 of the Treaty on the Functioning of the European Union that prohibits abuse of dominance. Both the US Federal Trade Commission (FTC) and the European Commission have found that Amazon's policy of tying its own logistics service to Amazon Prime status raises entry barriers to rivals. The European Union remedy redesigns the Buy Box and allows rival logistics services access to consumers. This remedy provides a useful benchmark to consider in designing remedies for the FTC and for California, which is also pursuing an antitrust case against Amazon. In general, both the US and the EU gain from the enforcement actions of the other.

1. Introduction

Improving competition in digital markets is a priority for the governments in both the United States and Europe. In the European Union, this can be seen in the Digital Services Act, the Data Act, and most importantly, the Digital Markets Act. In the US, the desire for more competition can be seen in the Biden Administration's appointments of leaders of the antitrust agencies who have brought several antitrust cases against digital platforms.

Amazon is one of the big-tech companies that receives regular criticism from politicians and the media. In the US, several antitrust cases against Amazon are currently in litigation, including those brought by the state of California (filed September 2022; Superior Court of the State of California, 2022) and the Federal Trade Commission and 17 states (filed September 2023; FTC, 2023)

These cases may have a bearing on enforcement against Amazon in Europe, where regulators have also been busy: an antitrust case brought against Amazon by the European Commission was resolved with commitments in December 2022 and commitments were also accepted in 2023 by the United Kingdom Competition and Markets Authority.¹ In addition, the European Commission has designated Amazon's

1 See European Commission press release of 22 December 2022, 'Antitrust: Commission accepts commitments by Amazon barring it from using marketplace seller data, and ensuring equal access to Buy Box and Prime', https://ec.europa.eu/commission/presscorner/detail/en/ip_22_7777. The UK CMA has already agreed commitments (CMA, 2023). In addition, the Italian Competition Authority levied a substantial fine of more than €1 billion; see press release of 9 December 2021, 'A528 – Italian Competition Authority: Amazon fined over €1,128 billion for abusing its dominant position', <http://en.agcm.it/en/media/press-releases/2021/12/A528>.

e-commerce business as a core platform service,² meaning it will have to comply with the EU Digital Markets Act (Regulation (EU) 2022/1925) beginning in March 2024.

The conduct described in the US complaints against Amazon harms competition between online stores and among the merchants who sell via them. The first harm is the suppression of price competition between e-commerce platforms. The second harm occurs when Amazon's market power reduces competition in the logistics that merchants use to support their e-commerce sales. If they are available, independent logistics firms lower the cost of entry of rival e-commerce platforms and thereby increase competition. The evidence in this context unearthed in the US investigations is highly relevant to successful enforcement in the EU.

Meanwhile, Amazon's commitments to the European Commission, and DMA provisions that apply to Amazon's core platform services, should increase contestability and fairness in e-commerce markets. As this Policy Brief details, the combination of these policies can be effective in giving merchants more choices and lowering barriers to entry to Amazon's competitors. The US lags behind Europe in competition enforcement of e-commerce, and so US authorities can learn from such European solutions. Likewise EU regulators can learn from US antitrust enforcement. Regulators on both sides of the Atlantic can build on the enforcement activities of each other. More robust solutions will create more contestability and fairness for consumers and businesses.

2. Stifling Price Competition

2.1. How Amazon's Alleged Conduct Controls Prices on Rival Marketplaces

The California and FTC complaints both accuse Amazon of operating what are effectively 'platform MFNs' (most-favoured nation commitments, a term borrowed from international trade) for third-party marketplace sellers and the brand representatives. Platform MFNs are requirements that third-party sellers on a platform, in this case a marketplace, set prices for the same good on competing marketplaces

2 See European Commission press release of 6 September 2023, 'Digital Markets Act: Commission designates six gatekeepers', https://ec.europa.eu/commission/presscorner/detail/en/ip_23_4328.

that are at least as high as those found on the platform requiring the MFN.

The MFN thus controls prices on the seller's own website and on competing marketplaces. These contracts end price competition between marketplaces because all prices for the good are the same. Furthermore, a merchant selling on a marketplace with lower fees cannot pass those lower fees through to consumers in the form of lower prices, without—under the terms of the MFN—also lowering the price of the good on the primary platform, in this case Amazon, which has higher fees. Therefore, a lower-priced entrant platform has no way to attract customers with lower prices if it wants to sell the products of merchants covered by the Amazon platform MFN. For this reason, platform MFNs also limit competition between marketplaces (Baker and Scott Morton, 2018).

A large economics literature³ confirms these intuitions: sellers will choose to set high prices on all competing sites to match those on a large platform with an MFN. This harms competition in goods. Second, the competing marketplace now has no reason to lower its fees, since it cannot gain more business that way. This harms competition between the marketplaces themselves and deters entry of more efficient marketplaces.

This economic logic is well-known among enforcers. MFN contracts have therefore been a frequent target of enforcement efforts in many industries. In 2013 Germany and the UK opened investigations into Amazon's MFN contracts, which caused the company to abandon them in Europe (Bundeskartellamt, 2013). In 2019, at the instigation of Senator Richard Blumenthal (not the FTC), Amazon voluntarily ended its MFN contracts in the United States. Observers might well think, therefore, that the anticompetitive effects of these contracts are gone.

2.2. De-jure versus de-facto MFNs

However, the US lawsuits set out the steps Amazon took to purposefully recreate the effects of the MFN contracts after it ended them formally. Both the California and FTC complaints describe the replacement tactics Amazon has used to control off-platform prices through the Amazon Standard for Brands policy (ASB), the Marketplace Fair Pricing Policy, the Seller Code of Conduct and Select Competitor—Featured Offer

3 See for example Cooper (1986), Salop (1986), Scott Morton (1997), Moshary (2015) and Baker and Chevalier (2013).

Disqualification (SC-FOD) (Superior Court of the State of California, 2022 (hereafter ‘Cal Comp’) paragraph 125; FTC, 2023 (hereafter FTC), paragraphs 276, 297).

If a seller’s prices are lower on a rival site (FTC ¶ 277), Amazon downgrades the listing of the good, and removes it from eligibility for the ‘Buy Box’ or ‘featured offer’ (FTC ¶ 84)(the Buy Box is the familiar box on the top right of the Amazon product page; it shows one seller that Amazon has chosen and, by virtue of the design of the box, is made more prominent than any other seller). Given Amazon’s huge consumer base, and the fact that 98 percent of purchases occur through users choosing the seller in the Buy Box (FTC ¶ 85), an excluded merchant is likely to lose significant sales with this downgrade.

Furthermore, the California and FTC complaints are detailed in their evidence that Amazon’s managers were aware of the purpose of the programmes. For example, SC-FOD was designed to enforce the contractual MFN’s “expectations and policies,” which “had not changed” (FTC ¶ 276). The FTC complaint states:

At one time, Amazon designated only the very largest online stores as ‘Select Competitors’ for purposes of SC-FOD. After dropping the price parity clause from its Business Solutions Agreement, Amazon exponentially expanded its classification of ‘Select Competitors.’ [...] According to a senior Amazon executive, Amazon expanded the designation of Select Competitors to make “The punitive aspect” of SC-FOD “more effective (FTC ¶ 280)

Both complaints explain that Amazon’s Standards for Brands, or ASB programme, contractually requires certain third-party sellers to “ensure that their products’ prices on other online stores are as high or higher than their prices on Amazon at least 95% of the time” and imposes additional restrictions on sellers’ inventory and Amazon Prime membership⁴ so they effectively cannot sell anywhere but on Amazon (FTC ¶¶ 291-2; Cal Comp ¶¶ 145-8). As with the SC-FOD programme, Amazon was clear about why it penalised ASB sellers who did not meet the programme’s requirements: “Amazon told those punished ASB sellers that they were being sanctioned because ‘customers considering

4 Amazon Prime is a paid subscription service that gives certain premium benefits to customers, including faster delivery of goods and access to music and other services.

your products could have easily found your products cheaper at another major retailer, and may have chosen to shop elsewhere” (FTC ¶ 297) These statements should raise concerns in all jurisdictions that Amazon’s contractual MFNs were only a small part of the competition problem.

2.3. How Amazon’s Alleged Conduct Controls Prices on Rival Retail Sites

The California complaint describes behaviour that also creates an effective MFN in Amazon’s retail operation. Amazon’s retail business differs from the marketplace business because Amazon itself buys goods at wholesale prices, owns those goods, and then sells them via its own website at prices it chooses. A marketplace, by contrast, hosts independent merchants that control what they sell and how it is delivered, and set their own prices.

As described in the complaint, brands that sell wholesale to Amazon fare even worse than re-sellers because of another MFN-like scheme. Amazon requires brands to agree to a contract called a Minimum Margin Agreement (Cal Comp ¶¶175-204). Amazon uses an algorithm to reduce its retail prices if it finds a lower price for the same product on a rival website, such as Walmart.com. But the brand Amazon buys from wholesale remains responsible for maintaining Amazon’s profit margin. The brand must therefore make up the difference between the price initially set by Amazon, and the lower price that Amazon has matched. This is true even though the brand itself does not choose the retail price in either setting; the online stores have that responsibility.

The result of this scheme is that whenever Walmart.com, for example, has a sale on a certain product or brand, Amazon matches the same price, and its profit margin may fall below its target level. If so, Amazon requires the brand to compensate it for the new low price. Naturally, this penalty causes the brand to want to sell to Walmart.com at a high enough wholesale price so that Amazon’s retail price will always be lower than Walmart’s. In general, a brand does not want to offer discounts to Walmart because that might encourage a sale that would cause the brand to suffer if Walmart.com decides to lower prices for any reason, e.g. to attract consumers to its store. The brand might even withdraw from Walmart.com altogether if such sales cause it to owe large sums to Amazon. Internal Amazon documents acknowledge the “*punitive aspect*” of this scheme (FTC ¶ 282). The anticompetitive impact

of this programme is the same as an MFN in its ability to raise prices at rival stores.

2.4. What Remedies Would Restore Vigorous Price Competition?

Assuming that the allegations about MFNs described in the preceding subsections are proved, agencies or courts will need to impose remedies to restore the lost competition. The simplest remedy is to ban MFNs entirely: wide MFNs (which cover prices in rival e-commerce stores), narrow MFNs (which cover prices on the website of the brand itself) and any conduct that creates the same incentives as an MFN. The EU has already banned MFNs in Article 5(3) of the Digital Markets Act.

To explain the impact of an MFN ban on the strategies of all parties, it is useful to consider two questions. First, for the MFN to be triggered, a rival must offer a lower price.

1. Why is a rival e-commerce store setting a retail price lower than Amazon's price?
2. The rival store has lower costs of operation than Amazon;
3. The rival platform bought the good from its manufacturer for a lower price; or
4. The rival platform has a different strategy or weaker market position than Amazon and lower prices are the best way to attract consumers.

These answers are standard manifestations of competition that benefits consumers. If prices are lower on a rival e-commerce site for any of these reasons, consumers gain, and the law should not permit Amazon to implement contracts or policies that suppress that competition. If Amazon wishes to retain customers after this MFN is banned, it can bring down its fees or raise its value. Likewise, Amazon can bargain for a lower price from the manufacturer, or possibly cut its costs by making its own-label version of the product.

The second question when assessing the potential impact of an MFN ban has to do with re-sellers:

1. Why is a third-party reseller setting a price on Amazon that is higher than on other platforms?
2. It thinks Amazon shoppers are inattentive and not price-responsive and is exploiting them with a high price; or
3. Its costs are lower on rival platforms because those platforms' fees are lower.

A reseller is not violating competition laws if it chooses to set different prices in different distribution channels for reasons such as differences in cost or demand. But, of course, this conduct hurts Amazon shoppers and Amazon's brand. A remedy that restores the lost competition in fees (5) should ideally allow Amazon to protect its own consumers from any possible exploitation in (4).

Handily, Amazon has already built the tool needed to combat the possible exploitation in (4): the Buy Box. When third-party sellers list on Amazon, the firm's algorithm evaluates their offers and puts the one that meets its criteria into the Buy Box (see the annex for an illustration). Consumers with ranking bias and default bias tend to purchase the option in the Buy Box, meaning that the winning seller typically obtains 98 percent of sales (according to the FTC complaint). If Amazon's algorithm weights high prices negatively, a third-party seller engaging in the exploitation in (4) would be expected to sell very little because it is not in the Buy Box and, if any diligent consumers search the listing, they will find an exploitative price—which will limit sales.

The design of the Buy Box means it can be used legitimately by Amazon to defend consumers on Amazon Marketplace from exploitation by high-priced sellers. Thus, it duplicates the pro-competitive impact of the MFN without the anticompetitive element, and can be used to replace it when the MFN is banned. Because the Buy Box is only for prices on the Amazon platform, it does not duplicate the restraint on horizontal competition that characterises an MFN.

Now consider the case of a product sold by only one reseller on Amazon, and which that re-seller is pricing in an exploitative manner. The Buy Box cannot fix this problem. However, Amazon has the incentive and ability to recruit another reseller to its platform. Entry will be attractive for the new seller because undercutting the incumbent's exploitative price still allows for a healthy margin. Thus, both Amazon and rival third-party sellers have an incentive to defeat the conduct

described in (4), while Amazon has the information to identify the opportunity and the ability to facilitate entry of lower-priced rivals.

If there is only one original seller of the product, such as the brand itself, there is also nothing for the Buy Box to leverage. But Amazon has procompetitive tools to combat this strategy. For example, the brand's listing on the search-results page could truthfully explain to the customer what the brand's regular list price is, and could recommend substitute products on Amazon that are not overpriced—all without removing the ability to buy the brand in a normal way.

An Amazon premium here could occur because the cost of selling is higher on Amazon. If the brand finds the costs of selling on Amazon to be higher than on other platforms, either because of advertising that is effectively required, or high fees charged by the platform, it may build those costs into the price it charges. This is a normal feature of competition. Customers will evaluate the benefits of the Amazon platform (OneClick purchasing, fast delivery, saved addresses) and compare them to the price difference. If the latter outweighs the former, the customer will leave Amazon to buy the brand for a lower price elsewhere.

A reasonable concern is that a ban on MFNs will lead to inefficient free-riding (showrooming). This occurs when sellers use the dominant platform to display their product and attract buyers, but then encourage those buyers to purchase off the platform, thereby avoiding the platform's fees. This can reduce below the optimal level the incentive to build and invest in a platform. However, a consumer who sees a product on Amazon and searches for the seller's page to buy it at a lower price is giving up all the services of Amazon: saved payment, saved addresses and quick delivery times. Amazon itself touts the superiority of its services and the stickiness it creates with time- and attention-strapped consumers. The government complaints contain quotations from managers at the company that acknowledge high switching costs for consumers (FTC ¶ 182). For these reasons, free-riding may be minimal.

3. Stifling Entry of Competitors

3.1. The Link between Shopping and Fulfilment

Additional allegedly illegal conduct described by the FTC relates to the tying of fulfilment by Amazon (FBA) membership to participation in Prime (and therefore sales, as noted above). Formerly, merchants

could use their own fulfilment and delivery services within the Prime programme (called SFP, or seller-fulfilled Prime) (FTC ¶ 400). The merchants that participated in SFP could have their listings qualify for Prime, and therefore the Buy Box, but also could send out those items using a logistics provider of their choice, rather than using Amazon.

This is important because such a merchant can then also fulfil sales from rival e-commerce platforms with the same logistics infrastructure they use for Amazon sales. This promotes the entry of rival e-commerce marketplaces because, by virtue of hosting the same sellers on their platforms, their delivery quality and cost is similar to Amazon's. When Amazon banned SFP or made it difficult,⁵ most Amazon merchants turned to FBA, which does not have this beneficial effect on rival marketplaces.

The FTC's complaint emphasises this impact on competition, namely that the decline in availability of independent fulfilment and logistics services at scale reduced entry and growth of rival e-commerce stores. When SFP reduced multihoming across e-commerce marketplaces, that reduced competition between marketplaces (FTC ¶ 405).

Amazon executives appreciated the value of the lessened competition, according to the FTC complaint. An Amazon executive states that the mere prospect of increased competition for fulfilment services "keeps me up at night" (FTC ¶ 391). Another executive "explained to his colleagues that he had an 'oh crap' moment when he realized that this was 'fundamentally weakening [Amazon's] competitive advantage in the U.S...as sellers are now incented [sic] to run their own warehouses and enable other marketplaces with inventory that in FBA would only be available to our customers'" (FTC ¶ 31).

5 FTC ¶ 408. Amazon wanted to minimize any potential backlash from SFP sellers, so in 2019 Amazon let sellers already in SFP remain, while blocking new enrolment. Critically, Amazon communicated to those sellers who were already in SFP that it expected them to fulfil orders themselves, rather than using independent fulfilment providers. Amazon's internal analyses showed that sellers using independent fulfilment services met Amazon's stringent SFP standards more often than sellers fulfilling orders themselves. For example, in the last quarter before Amazon suspended enrolment, SFP sellers using independent fulfilment providers satisfied Amazon's delivery requirement 98.4 percent of the time (compared to 96 percent for all SFP sellers), and satisfied Amazon's shipping requirement 99.8 percent of the time (compared to 96.8 percent for all SFP sellers).

3.2. Fairness Concerns

The FTC complaint tracks the concerns expressed by the European Commission about the way in which the design of the Buy Box effectively required sellers to participate in Prime and therefore to use FBA. However, that similarity masks an interesting element to the European case. The Italian competition authority started its investigation⁶ because local rival logistics operators wanted to be included by Amazon on an equal basis to Amazon's logistics. The conflict with Amazon arose because of the possibility that rival logistics providers have slower delivery times. The open question is whether Amazon treats rival logistics providers as consumers prefer (by performance) or in a way that favours Amazon's logistics services.

The European Commission case also demonstrates a view that the treatment of merchants was unfair in that Amazon's own products were ranked higher than equivalent rivals and the Buy Box incentives were extremely sharp. In other words, if a merchant did not get into the Buy Box (which required buying FBA), their sales dropped almost to zero, while their Amazon ranking may only have been very slightly lower than the winner's rank. Such a strong response becomes unfair to sellers if there is any bias or imprecision in the ranking. This concern for fairness is conceptually distinct from the competition, but is a feature of European antitrust enforcement.

However, the fairness element is not central to the argument of illegality in either case. Since a merchant will not use a logistics service that causes exclusion from the Buy Box, the Amazon policy linking FBA, Prime and the Buy Box has an exclusionary impact on rival logistics providers. These policies prevent merchants from multihoming (offering their goods on multiple marketplaces), which in turn creates an unnecessary barrier to entry of rival marketplaces. The link to competition is fundamental.

And importantly, while the quality of current rivals may be poor, that does not invalidate this theory of harm. Under different rules logistics providers would have different incentives to invest. If a rival could serve merchants within the Amazon Prime programme, it would have the incentive to invest to improve its quality so that merchants would select it, and this would generate competition in logistics. If the Amazon algorithm is, in fact, downgrading products that consumers prefer, this

6 See footnote 1.

lowers the quality of the service and should cause consumers to switch to a rival store. If rival stores can more easily enter because rival logistics are available, then competition between merchants will improve. If the Amazon algorithm only ranks products according to attributes valued by consumers – with no bias or distortion – competition among those merchants will intensify and consumers will benefit.

3.3. Remedies to Protect Competition in Fulfilment

A simple remedy to apply in the United States would be the restoration of the Amazon SFP programme, which was shown to be technically feasible and popular with merchants (see section 4.1). Merchants would always be free to choose Amazon’s fulfilment service. It is likely Amazon would want to establish quality standards for rival delivery services to qualify for Prime, in order to maintain the reputation of the Amazon brand for quality and reliability. Information reported in both the EU and US has shown that Amazon previously tracked such performance. Maintaining quality standards to ensure consumers have a good user experience is a perfectly procompetitive policy, provided the standards are transparent and are applied fairly. If so, a delivery service with a proven quality can be used by merchants in SFP, and their listings will be treated equivalently to those delivered by Amazon.

The European Commission has taken two approaches to a remedy. The prohibition decision was resolved with commitments that Amazon implemented in 2022 (Amazon, 2022):

To address the Buy Box concern, Amazon proposed to commit to:

- treat all sellers equally when ranking the offers for the purposes of the selection of the Buy Box winner;
- display a second competing offer to the Buy Box winner if there is a second offer from a different seller that is sufficiently differentiated from the first one on price and/or delivery. Both offers will display the same descriptive information and provide the same purchasing experience.

To address the Prime concerns Amazon proposed to commit to:

- set non-discriminatory conditions and criteria for the qualification of marketplace sellers and offers to Prime;

- allow Prime sellers to freely choose any carrier for their logistics and delivery services and negotiate terms directly with the carrier of their choice;
- not use any information obtained through Prime about the terms and performance of third-party carriers, for its own logistics services

Notice that the Buy Box rule in these commitments will be a less-effective replacement for an explicit MFN—as argued above—because it cannot steer users to a less-expensive option as forcefully. The results of this combination of commitment and DMA ban will need to be studied to evaluate if the former weakens the latter.

4. The Role of the DMA in Promoting Competition in Ecommerce

4.1. DMA Rules

One might think that Europe is ahead of the US in banning MFNs because Amazon gave up its MFN contracts in Europe in 2013 (Bundeskartellamt, 2013). But the US litigation evidence raises the possibility that the company effectively replicated the prohibition on sellers discounting off the Amazon platform by other means—and this could have been true in Europe as well. It is therefore unclear whether the outcomes (prices and entry) Europe has experienced in the last ten years reflect competition effectively free of MFNs or not.

The European Digital Markets Act (Article 5(3)) again bans MFNs for the core platform services designated by the European Commission. Amazon's retail business is a CPS and therefore must comply with Article 5(3) by March 2024. If the processes and algorithms described above are being used in Amazon's European operations today, these will surely be viewed as violating the DMA and would have to be changed.

The DMA also explicitly permits disintermediation of the platform in Article 5(4). It says that gatekeepers, or the hard-to-avoid digital giants covered by the DMA:

...shall allow business users, free of charge, to communicate and promote offers, including under different conditions, to end users acquired via its core platform service or through other channels, and to conclude contracts with those end

users, regardless of whether, for that purpose, they use the core platform services of the gatekeeper.

Juxtaposing this wording with text from Amazon's Seller Code of Conduct in the US is informative:⁷

Circumventing the Sales Process: You may not attempt to circumvent the Amazon sales process or divert Amazon customers to another website. This means that you may not provide links or messages that prompt users to visit any external website or complete a transaction elsewhere.

Article 6(5) of the DMA requires gatekeepers to not rank their own services and products more favourably than those of third parties. This rule backs up, or duplicates, one of the Buy Box commitments and might affect Amazon's house brands and retail products relative to the products of third-party sellers on Amazon Marketplace. It also likely applies to Amazon's Prime fulfilment and delivery service (FBA). FBA should not automatically be ranked favourably relative to services of third-party sellers, but rather the ranking conditions should be "transparent, fair and non-discriminatory." Amazon itself has the ability to measure how well SFP serves customers; it found that over 95 percent of the time, SFP met the delivery requirements set by Amazon (FTC ¶ 401). Under this rule, it would seem that a product delivered by a rival service that is as fast and reliable will cause the product to be ranked equivalently to one being delivered by Amazon Prime, all else being equal.

Importantly, in addition to Articles 5(3) and 5(4), the DMA also contains an anti-circumvention rule in Article 13. If Amazon devised methods to effectively replace the platform MFN contracts, they could be considered circumvention of 5(3) and 5(4). Such an interpretation is supported by statements in the FTC complaint against Amazon such as "replacement of a contractual price parity term with an expansion of SC-FOD would appear to be] not only trivial but a trick and an attempt to garner goodwill with policymakers amid increasing competition concerns" (FTC ¶ 15).

7 See https://m.media-amazon.com/images/G/65/rainier/help/Selling_Policies_and_Seller_Code_of_Conduct_SG_new_version_clean_PDF.pdf.

4.2. The Effectiveness of the DMA

The Commission defined Amazon's core platform service to be its marketplace services, not its retail services. Therefore, the de-facto MFN that operates through the retail channel, the Minimum Margin Agreement, may not be governed by the DMA. The EU competition authority may want to bring an antitrust case against Amazon's retail MFN under Article 102 of the Treaty on the Functioning of the EU (prohibiting abuse of dominance). In this way the antitrust law would complement the DMA and fill an enforcement gap. This package of enforcement outcomes such as price and quality in the EU e-commerce marketplace. Rival e-commerce sites that do not require costly advertising and/or have lower participation fees will enable merchants to set lower prices there and attract consumers with those lower prices.⁸ Because of the prohibition on MFNs, those merchants will not be penalised by Amazon for the price differential. In a setting of unfettered competition we may see consumers leave Amazon in pursuit of lower prices, or we may see consumers choose to pay more for the quality they are accustomed to and stay with Amazon. Either outcome is a manifestation of competition. Business users will be free to set the prices they want on each distribution channel they use, and end users will therefore have more choice and lower prices.

DMA Article 13 prohibiting circumvention will play an important role in enforcement of the other Articles needed to create competition in e-commerce. Because it is clearly straightforward to create algorithms and policies that mimic the effect of a contractual MFN, enforcers will need to develop processes or tests to monitor compliance under DMA Article 5(3), or the ban on MFNs will achieve almost nothing.

Successful enforcement will advance the DMA's contestability and fairness goals. The ban on MFNs increases contestability both on the platform and between platforms. Safeguarding merchants' freedom to contract differently across distribution channels and the equitable ranking of offers enhances fairness between different business users, as well as between business users and the platform's offerings.

8 FTC ¶ 236. The FTC complaint quotes one Amazon executive as acknowledging that advertising costs are "likely to be passed down to the customer and result in higher prices for customers"; Amazon founder Jeff Bezos is quoted as instructing executives to "accept more 'defects'" (the term for junk advertisements) because the advertising revenue to Amazon is more than the sales it loses from the degradation in search quality and higher prices. See FTC ¶ 5.

5. Conclusions and Policy Recommendations

Soon there will be evidence of the effectiveness of the newly mandated choice architecture of the Buy Box and its algorithm. Enforcers, merchants and Amazon will be able to measure the performance of third-party fulfilment and delivery, which will be very helpful to policy development. The changes should cause products without Prime shipping and lower prices to appear higher in the organic ranking, which could reduce the influence of Prime.

However, advertised products may fill the search results page so that shoppers do not see these highly ranked, inexpensive products. Such a poor user experience might cause consumers to shop elsewhere, and if the MFN provision (DMA Article 5(3)) is enforced, competitors to which consumers can switch will enter. Even better, switching consumers can use their rights under DMA Article 6(9) to choose to port their personal data, including addresses, recurring purchases and methods of payment, to their new accounts with rivals.

Enforcers in the US should pursue a simple ban on platform MFNs because it will likely preserve competition between platforms with minimal negative impact. An effective remedy would also be to ban conduct and contracts similar to MFNs in Amazon's retail business, such as the Minimum Margin contracts. If all those contracts—and the establishment of any similar programme that achieves the same anticompetitive ends—are prohibited, price competition will be able to flourish online. Given the policies Amazon seems to have adopted to replace MFNs in practice, both elements of the remedy are crucial.

In Europe, the main enforcement challenge seems to be possibility of de-facto MFNs enforced through carefully designed algorithms. Amazon's March 2024 compliance report to the European Commission may need to include information describing whether Amazon tracks the prices of its sellers on other platforms, and if it does, what actions Amazon takes after it finds sellers charging less outside Amazon's marketplace. The answers to these questions are critical to demonstrate the gatekeeper is in compliance with the DMA. The Commission may find the information revealed in the US litigation to be helpful as it interprets Amazon's compliance reports, as well as in any Article 102 litigation.

The case of Amazon illustrates that different parts of the DMA can work together to create a whole that is greater than the list of those

parts. Eliminating MFNs allows for lower prices on rival sites, while a consumer's ability to port her data allows for easy switching to those sites. Unbiased rankings allow the best choices to rise to the top of the search results page, including choices fulfilled by a rival logistics provider. That rival logistics provider in turn can support entry in e-commerce. And the entrant can attract customers with a differentiated strategy which cannot be blocked by incumbents using MFN-equivalent policies or practices. The addition of the Buy Box redesign adds to the force of this combination.

Making sure this cluster of policies is effective at increasing contestability and fairness will require measurement of outcomes as well as inputs. What choices appear in the Buy Box and how do consumers respond to different design choices in the shopping environment? Measurement of the performance of all parties providing fulfilment and logistics will likewise be critical to policy evaluation.

The more effective these European Commission enforcement changes are—the MFN enforcement, portability of data, the Buy Box design and the increased shipping options—the more likely it is that they will be exported to other jurisdictions facing similar problems, whether from Amazon or another local dominant e-commerce platform. In the United States, third-party sellers and brands will want California and the FTC to demand the European solutions if they are shown to be successful. Litigation in the US moves so slowly that there will be plenty of time to evaluate the outcomes of the existing EU antitrust commitments and the DMA before any US remedy would need to be chosen. Moreover, a judge would likely find it attractive to choose a remedy that reduces the possibility of negative unanticipated outcomes in the marketplace. A solution that has been tried in Europe and has succeeded there is much less risky to impose on US consumers. Additionally, Amazon cannot argue that such a remedy is costly or difficult from an engineering point of view because the company will already have built and deployed it in Europe. But this cheerful picture depends on the effectiveness and success of the new European enforcement package.

“Annex: The Buy Box” can be viewed in the original article, published online at <https://www.bruegel.org/policy-brief/improving-contestability-e-commerce-two-jurisdictions-amazon-case>

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PART V.

Google's Monopolies

The monopoly on general search services held by Google is both economically important and difficult to solve. Google's monopoly in distributing Android apps through its PlayStore is likewise critical for digital businesses seeking to grow, but a solution to open that market is straightforward. In these cases Google's monopoly harms both competition in the market itself, search or distribution, as well as the growth of every other business that needs access to end consumers. To gain access to users, a rival in search or in distribution must be able to access them through both iOS, Apple's mobile operating system, and Google Android, Google's proprietary Android build. The DMA and the remedies proposed by the US DOJ in December of 2024 make broadly the same points concerning the market for search. Google may not use contracts and payments to obtain preferential distribution for its search engine on Apple's handset and Google must open up its Android operating system so that it does not use contracts, payments, or technological means to exclude search rivals. The DMA and the US district court in *Epic v. Google* also ask for broadly the same remedy: Google must allow rival app stores to operate without discrimination and with access to the same functionality as its own store.

Chapter 11.

Digital Market Act Designations: The Interoperability of Google Android

November 8, 2023*

The European Commission has taken an intelligent first step in enabling competition to Google Android and Google Play Services.

On 6 September, the European Commission issued decisions on designation of core platform services (CPS) under the European Union's Digital Markets Act.¹ Google's mobile operating system was designated as a CPS (European Commission, 2023), as expected given the large number of users it serves. Once designated, a CPS must comply with the DMA's list of rules; the determination of exactly what is inside the CPS versus outside it can be consequential. The Commission has chosen a definition of the Google Android CPS that allows new device makers and app-store providers to capitalise on existing network effects, which will promote contestability.

A Reminder of the Problem

Google's Android operating system (OS), code that enables a smartphone or tablet to operate and apps to run properly, is currently found in the Android Open Source Project and Google Play Services, a collection

* Previously published as Fiona M. Scott Morton, "Digital Market Act Designations: the interoperability of Google Android," Bruegel Analysis, 8 November 2023, <https://www.bruegel.org/analysis/digital-market-act-designations-interoperability-google-android-0>.

1 //digital-markets-act-cases.ec.europa.eu/gatekeepers.

of software functionalities. Google packages Google Play Services together with the Google Play Store, but the function of the store is quite different, being simply app distribution. By keeping important Google Android functionality within the proprietary Google Play Services and omitting it from the open-source license, Google has been able to leverage access to its monopoly operating system. It does this by making a device maker's access to Google Play Services conditional on protection from competition in markets that are important to Google, including search, browsers, app stores, maps and video.

Using this strategy Google lessens competition for its services, including Google Search, Chrome, Google Play Store, Google Maps and YouTube. In much of the world, Google requires device makers (or original equipment manufacturers, OEMs), if they wish to install Google Play Services, to exclusively preinstall these critical Google apps, making them defaults, relegate competitors to those apps to back pages, and not support competing versions of Android.

OEMs agree to these conditions because they know that users will not buy a device that does not give them access to a rich set of (functioning) apps. A device without Google Play Services will not run most apps; they simply fail and close. This lack of functionality has been a significant barrier to entry of competing app stores. Consumers will not buy a device with an app store that does not have developers on the other side of the two-sided market. In principle, developers could write for the open-source OS, but network effects are strong; developers want to develop apps for the OS used by many consumers, while consumers want the OS that has the most apps.

Up to now, OEMs installing a rival app store, or users attempting to download apps through a rival app store, have encountered this problem and have not had functioning products unless they also install Google Play Services. An OEM that does this but also tries to offer a rival app store runs into the web of contracts requiring the default to be the Google Play Store and the rival store to be placed on a later page, while the rival's performance is degraded relative to that of the Google Play Store, and Google incentivises developers to not use the rival. Controlling access to this critical interface gave Google powerful leverage over developers and the OEMs it used to obtain all of these valuable concessions: preinstalled default positions for its app store, search and the like. Excluding rival operating systems, app stores and

search engines has resulted in market power that has in turn permitted the platform to extract fees from business users and end users, to control innovation and to continue to exclude rivals.

In theory, these contracts were prohibited in the wake of the 2018 European Commission Google Android case, although Google is widely thought to have evaded the prohibition rather successfully.² The Android prohibitions also required Google to let consumers select a default search engine through a choice screen, instead of being assigned one by Google or the OEM. The literature shows that Google also evaded this requirement rather successfully (Ostrovsky, 2023). The antitrust case record as a whole does not emphasise that distinguishing between the Google Play Store and Google Play Services is a critical factor in understanding the market power of the ecosystem.

The Designation

The EU Digital Markets Act (DMA) reinforces and expands both of the Google antitrust commitments. Article 6(3) of the DMA requires choice screens at first use of the most important Google apps, while throughout the law there is a great deal of emphasis on choice architecture being effective and neutral. Circumvention using dark patterns, or exploitative user-interface designs that lead to decisions against the user's interest, is explicitly banned.³ Article 6(3) requires that a user can "easily change" a default they don't want and permits rivals to ask to become a user's default. Article 6(7) protects the technical degrading of rival app stores by requiring that they have access to the same OS hardware and software functionality without charge. The definition of the OS is obviously critical to making that rule effective. This is where the designation decision comes in.

The European Commission took an important step forward in creating contestability in both search and mobile operating systems with the definition it used in the designation of Google Android. The relevant finding is stated clearly in the summary of the decision:⁴

2 //techcrunch.com/2018/10/16/google-tweaks-android-licensing-terms-in-europe-to-allow-googleapp-unbundling-for-a-fee; Natasha Lomas, 'Google Still Claimed to Be Blocking Search Rivals on Android, Despite Europe's Antitrust Action', TechCrunch, 18 December 2018, <https://techcrunch.com/2018/12/18/google-still-claimed-to-be-blocking-search-rivals-on-android-despite-europes-antitrust-action>.

3 A dark pattern is a user interface that has been crafted to trick users into making choices the user would not make if presented with a neutral choice environment.

4 The full decision (European Commission, 2023) makes the same point in paragraph 165 and the surrounding text. "Finally, as regards Alphabet's middleware,

With respect to Alphabet's operating system Google Android, the Commission designates Google Android and Alphabet's related middleware (and in particular Google Play Services—not to be confused with the app store Google Play) as a single CPS insofar it contributes to controlling the basic functions of Google Android tablets and smartphones and to enabling software applications to run on them, thereby ensuring an effective functioning of Google Android.

With this designation, the Commission defines the code that constitutes the Google Android operating system by whether third-party apps can 'effectively function' on it. The open-source version of the Android Open Source Project (AOSP) does not contain some of the important functionalities that are used by app developers. If the CPS defined by the Commission were only AOSP, it would not achieve the objective of the DMA, which is to open up platform network effects so they can be used by entrants. The Commission's designation is a step forward in the enforcement of the DMA because once a definition of the CPS is based on functionality, it is robust to technological change as the OS evolves. In addition, it is robust to choices by Google to split off further pieces of the OS, name them something different, and put them in another place in the ecosystem. By using a definition that captures the indirect network effects, the DMA can keep the platform contestable.

Entry under the DMA

The DMA's definition of the Google Android CPS makes it possible for a user to take advantage of rights under Article 6(4) to both install and

the Commission notes that, based on the information available to it, it cannot be excluded that some of the operating system features of Google Android are included in or require Alphabet's middleware in order to function, such as certain elements of Google Play Services. With regard to Google Play Services, for example, the Commission notes that virtually all of the devices that implement and are enabled by Google Android in the European Economic Area ("EEA") also make use of Google Play Services¹²⁶ and Alphabet itself describes Google Play Services as 'a core system software that enables key functionality on every certified Android device'. Therefore, Alphabet's middleware, insofar as it contributes to controlling the basic functions of Google Android tablets and smartphones and to enabling software applications to run on them, thereby ensuring an effective functioning of Google Android, should be considered part of the operating system CPS Google Android. References to 'Google Android' should therefore in the remainder of this decision be understood to also cover Alphabet's middleware as defined above."

designate a rival app store as the default on an Android phone. A user could also uninstall the Google Play Store without worrying whether the apps on the handset would continue to function. This in turn has powerful implications for the operation of indirect network effects on Google Android devices. Rival app stores could then take advantage of the indirect network effects of the Google Android CPS because, at the moment of entry, they will already have a large installed base of developers available. App store access to those network effects promotes contestability. By joining a network that already has many users and many developers, a rival app store or payment method is well-positioned for adoption by both sides. This will counter the problem that, being unable to take advantage of indirect network effects, even stores backed by significant industry players have failed entirely or remain tiny.⁵

To appreciate the significance of the change in the Android environment, consider how the entry into the market in 2014 of the Amazon Fire smartphone would likely have played out under this definition of the Google Android CPS, combined with DMA rules.⁶ The Fire phone could have run Google Android instead of the AOSP operating system. In all probability the Fire phone would have been sold with an Amazon App store (instead of the Google Play Store) to advance Amazon's business model. Since all authorized Android apps would have functioned normally when obtained through the Amazon store, this would be of no technical concern, even when the Google Play Store was not installed. Consequently, the Amazon store could have gained from indirect network effects and recruited developers into its store. Developers might well choose to distribute apps through a channel with access to a unique set of users and perhaps offering more benefits to developers (for example, a fee percentage below 30 percent). This is even more likely if the developer does not need to invest additional resources in customizing the app for the uncertain new channel, but can simply distribute an authorised app they have created already.

5 //www.fastcompany.com/3039887/under-fire. On competing app stores see for example Ron Amadeo, 'Google Wants Samsung to Kill Bixby, Galaxy App Store', Ars Technica, 29 July 2020, <https://arstechnica.com/gadgets/2020%7/google-wants-samsung-to-kill-bixby-galaxy-app-store/> ("Samsung's Galaxy App store is used to update Samsung's core Android apps that ship with a phone, but there's really no reason to keep it around for most countries").

6 Amazon introduced the Fire tablet in 2011 using AOSP plus proprietary software from Amazon and the Fire phone in 2014. The Fire phone was discontinued in 2015.

Because the DMA mandates access to the Google Android CPS, there is no longer any need for a device maker to bargain for Google Play Services. The device designer can include and arrange any set of apps and functionalities they think will attract users or will fit with their business model (subject to the rules in the DMA covering CPSs). Users might like or dislike the value proposition of the app store and device, but not because of a lack of compatible apps. If Google chose not to distribute Gmail through the Amazon app store, for example, Fire users could sideload Gmail, or install the Google Play Store and obtain apps there. Under the DMA, Fire users would easily be able to change the default app store, in addition to being unrestricted in their use of more than one store. The key takeaway is that if such a device had an attractive value proposition for users, app-store network effects would not prevent it from succeeding in the marketplace.

Wider Impact

The Commission's definition of Google Android may be useful to the Department of Justice in the United States as it struggles to come up with remedies in its ongoing antitrust trial against Google in Search (in the event the government prevails).⁷ If the DOJ repeats the remedies the European Commission tried between 2018 and 2022, it is likely to get a repeat of the changes in Europe: minimal. But a clear and practical definition of the operating system might lessen circumvention of behavioural US remedies, even if they take the same form. Contracts between Google and OEMs are often global, or close to global, in scope. Prohibiting Google from tying its search and browser to its correctly defined OS may be more effective when applied in both the US and Europe than prohibitions in Europe alone.

The inclusion of Google Play Services in the CPS in Europe is critical to freeing OEMs from the bonds of the previous contracts. These contracts, along with control over proprietary network effects, blocked entry of both rival AOSP-based operating systems and search engines. It is not clear how many firms in either business the market can support, but dismantling the most significant barriers to entry is the first step in finding out.

7 //www.theverge.com/23869483/us-v-google-search-antitrust-case-updates.

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Chapter 12.

Judicial Remedies to Restore Competition in the Market for General Search

October 10, 2024*

I. Introduction

In August of this year, after a nine-week trial, a United States District Judge found Google (today known as “Alphabet”) liable for illegal monopolization of the general search market. The court now has set a schedule for proceedings to determine what remedies to impose, which will culminate in a further evidentiary hearing that likely will begin in April of next year and a decision and judgment to issue by August. This essay presents the considered views of a collection of American and European economists, technologists, and competition experts, all of whom have studied digital markets and the platform economy for years.¹ We present a proposed suite of interrelated remedial proposals

* Previously published as Fiona Scott Morton, Alissa Cooper, David Dinielli, Amelia Fletcher, Paul Heidhues, Gene Kimmelman, Margaret O’Grady, and Monika Schnitzer, “Judicial Remedies to Restore Competition in the Market for General Search,” Michigan State Law Review Forum (10 March 2025).

1 The Tobin Center for Economic Policy at Yale hosts the papers of the Digital Regula on Project as a way for some of the world’s leading economists and regulatory experts to present policy recommendations, based on their relevant research and expertise. The

that, together, are likely in our view to restore competition to the market for general search.²

II. The Illegal Conduct

The court's finding of liability still feels in some ways unexpected: courts in the United States, particularly appellate courts whose decisions can appear influenced more by policy and ideology than by evidence, have been trending in a conservative direction in competition cases.

On the other hand, it's relatively easy to conclude that Google is a monopolist and engaged in monopolization. Google holds 94% of the general search market on mobile and has held a similar share for a decade. One of the ways it has maintained its hold on this market is an arrangement with Apple—its most threatening competitor—that compensates Apple for default positions; this encourages Apple to stay out of the search market. Each year, Google pays Apple more than \$20 billion (US) to make Google search the exclusive default at all search access points on Apple's operating systems. Each company benefits from the arrangement: Google maintains its monopoly and Apple gets a share of the monopoly rents.

The arrangement, however, also plainly kneecaps current rivals and discourages the development of potential rivals in the search market.

One of the findings of the trial (long known in the economics discipline) is that consumers stick with a default choice even when taking just a few minutes to adjust the settings on their handset would give them a different search engine. Default status is therefore economically valuable and, were it available, would be the best way for entering search engines to gain customers. But these exclusive contracts make it virtually impossible for a rival search entrant to outbid Google for a default position on iOS. Rivals therefore cannot get access to compete for the millions of Apple users. And it is not only third parties that the Apple-Google contract blocks. It also eliminates any incentive for Apple to develop its own search engine. Why would Apple bother

Tobin Center does not take policy positions and therefore the content does not represent the positions of the Tobin Center or Yale University; nor does it represent the positions of any other institution with which any of the coauthors are affiliated.

2 Different authors of this essay may have differing views on the importance or likely efficacy of certain elements of our proposal, yet all endorse the *collection* of interrelated remedies proposed herein as the most likely of those publicly proposed to date to restore competition to search.

trying to develop its own search engine to compete with Google's when, with no effort at all, it can earn billions of dollars just by making Google's search engine the default on all of Apple's devices?

Google uses a similar strategy to prevent potential search competitors from reaching Google Android users. Independent handset makers must license a mobile operating system for their handset to work, and Google's Android OS is the only option. Therefore, Google has tremendous market power over handset makers and can impose extractive licensing conditions. The licensable Google Android OS includes open-source Android as well as proprietary code embedded in Google Play services and in other functionalities as well.³

Google requires, through contracts called Mobile Application Distribution Agreements (MADAs), that any OEM licensing Google Android pre-install a suite of apps and functionalities called Google Mobile Services (GMS).⁴ GMS includes, among other apps and functionalities, the Google Search Widget, Chrome, and Google Play.⁵ Because Google Play services contain SDKs (software development kits) and APIs (application programming interfaces) that are critical to the proper functioning of the OS, and because Google Play services and the Google Play Store are available only as a part of the GMS suite, OEMs must as a practical matter accept MADAs that require the installation of the entire GMS suite, including the Google Search Widget and Chrome (which defaults to Google Search).⁶

The MADAs do not expressly preclude OEMs from preinstalling an additional search widget and/or browser. In practice, however, manufacturers recognize that "preloading more than one of the same search access points, especially in similar prominent positions" amounts to "bloatware" that would confuse users if adopted.⁷ The result is that all OEMs that license Google Android, even Microsoft, which owns Bing, manufacture and sell devices on which the Google

3 We define "Google Android" by its function, namely the entirety of all code needed for third-party developers to run their apps. The Android Open Source Project, Google Play Services, and other necessary APIs together constitute "Google Android."

4 See *United States, et al. v. Google LLC*, Cases No. 20-cv-3010; 20-cv-3015, Memorandum Opinion (D.D.C. Aug. 5, 2024), available at <https://static01.nyt.com/newsgraphics/documenttools/f6ab5c368725101c/43d7c2a0-full.pdf>, at 118.

5 See *id.* at 119.

6 See *id.* at 119-20.

7 See *id.* at 121-22.

Search Widget is the only preinstalled search widget, and most OEMs manufacture and sell devices on which Chrome is the only preinstalled browser.⁸

Google additionally enters revenue sharing agreements (RSAs) with OEMs and with carriers whereby the percentage of search revenue shared with the partner is tiered and based on the degree of exclusivity as well as the prominence on the handset that is given to Google Search (through, for example, the exclusive placement of the Chrome browser on the home screen).⁹ The RSAs thus reinforce the coercive effect of the MADAs' requirement that OEMs install the entirety of the GMS suite of Google products by overlaying a financial incentive not just to install Google features that default to Google Search, but also to give them prominence relative to rivals' products (including rival browsers) that might steer traffic away from Google Search.¹⁰

Thus, even if device makers might prefer to offer their users a different default search engine, or even multiple differentiated search engines on the front page, Google's contracts have the effect of preventing it or making it economically irrational.

Google's argument in the trial court—that it's the best search engine and that's why everyone uses it—failed for obvious reasons. In the case of an Android device maker, the contracts with Google *require* that Google Search be the exclusive default. In the case of Apple, common sense tells us that *if* the search engine is indeed the best available, and *if* consumers could choose freely and fairly among rival search engines, then the vast majority of consumers would choose Google, rendering it unnecessary for Google to deploy exclusive contracts to forbid Apple from placing a rival search engine in the default positions. And if for some reason it were necessary for Apple to make a single search engine the default, and Apple thought Google was the best choice, we would expect Apple to select Google, even were it not being paid \$20B per year to do so. After all, the best component improves quality and therefore generates increased demand for the finished good, which benefits Apple. Here, if the only dynamic at play is that Google's search engine really is the best, why is Google paying Apple to use it? The true reason is obvious:

8 See *id.* at 122.

9 See *id.* at 123.

10 See *id.* at 123 (“Google has long viewed RSAs with carriers as essential to securing query traffic on Android devices to the exclusion of rivals.”).

to freeze the market with Google in place as a monopolist and prevent entry by rivals who might otherwise seek placement on Apple devices, thereby shutting down competition.

III. The Purpose of Remedies in a Monopolization Case

The Department of Justice must supply a proposed plan for remedies by November 20 of this year. As framed by the Supreme Court, Section 2 remedies should “start from the premise that adequate relief in a monopolization case should put an end to the combination and deprive the defendants of any of the benefits of the illegal conduct and break up or render impotent the monopoly power found to be in violation of the Act.”¹¹

Thus, the principal goal of a court-ordered remedy should not be to punish, but rather to restore the lost competition. The fact that punishment is not the principal goal, however, does not mean that the monopolist will or should find the remedies painless. Dismantling or blunting the monopolist’s power (whether through conduct remedies or structural remedies) necessarily will be costly to the monopolist. This is not to be avoided, but rather advances one appropriate purpose of Section 2 remedies as stated by the Supreme Court: to deprive the monopolist of the fruits of its illegal conduct.¹² If restoring the lost competition is costly for the monopolist, that is not a concern; it is equitable for the monopolist to bear those costs. The need to restore the lost competition generates a logical path that arrives at an effective remedy.

In this inquiry, there is no role for assumptions about general types of remedies—for example, whether behavioral or structural remedies are better. Instead, the focus should be on restoring the lost competition through whichever set of remedies are necessary to accomplish that goal, regardless of whether those remedies are properly described as behavioral, structural, or something else.

In the case of Google Search, what are the remedies that might restore the lost competition? Many policy experts worry that no remedy will be effective at generating vigorous competition among search

11 See *United States v. Grinnell Corp.*, 384 U.S. 563, 577 (1966) (emphasis added); see also *United States v. United Shoe Mach. Corp.*, 391 U.S. 244, 250 (1968) (“[I]n a [section] 2 case ... it is the duty of the court to prescribe relief which will terminate the illegal monopoly, deny to the defendant the fruits of its statutory violation, and ensure that there remain no practices likely to result in monopolization in the future.”).

12 See *Grinnell*, 384 U.S. at 577.

engines because Google “is the best” and so, they fret, nothing can be done. This point of view misses two key issues. First, search engines may horizontally differentiate; not everyone needs to have the same favorite search engine. A competitive market might have given us rival engines that differentiate through specialized curation, vetted information, innovative privacy preservation technologies, cross-domain searching functions like Spotlight¹³ or Branch, and so forth.

Second, the “remedies won’t do anything” view is stuck in the market we have now and does not recognize its potential dynamic nature. When Google obtains all the search data while ensuring that competitors have almost none, it can (unsurprisingly) build the best search engine. As rivals gain access to more search query data, however, their results will improve and make them more attractive to users. If a rival can obtain default status, it will obtain data, and then quality. The current inability of competitors to begin moving along this virtuous circle of customer-data-quality-more customers means that there is no business future for them. No matter how significant the innovation by the potential rival, there will be no venture capital funding for an entrant in a world where it cannot obtain customers.

On the other hand, if we consider a dynamic environment in which an innovative competitor is permitted to compete for a contract to be a default search engine—perhaps it starts with default status on one handset model or one type of search access point—then the entrant can get funding because there is a path to success. Data will lead to rapid improvement in quality, in turn leading to more intense competition between the entrant and Google as quality converges. This environment is one in which entrepreneurs and funders can thrive and grow, and thus kick start innovation. Successful remedies will open up the market so that competition on the merits can take place.

There are a number of regulatory and judicial interventions that could help competition to search, as has been described previously.¹⁴ This essay proposes remedies we recommend the District Court order at the

13 See <https://support.apple.com/en-us/118232> (describing how Apple Spotlight allows the user to search across their device and the web).

14 See, e.g., Paul Heidhues *et al.*, *More Competitive Search Through Regulation*, 40 *Yale J. on Regul.* 915 (2023).

conclusion of its evidentiary hearing. In Parts IV-IX, we describe our proposed interrelated package of behavioral and structural remedies, and their economic and factual underpinnings. In Part X, we describe several standalone interventions the court impose even if it does not adopt our suite of interrelated remedies in its entirety. The essay concludes by reminding the reader that, because of the duration of Google’s monopoly and its attendant consequences, remedies that restore competition to the search market necessarily must be transformational.

IV. Restrict Google’s Contracts

Remedies are traditionally classified into two categories: conduct remedies and structural remedies. Some interpretations of the *Microsoft* decision interpret it as eliminating the possibility of a structural remedy in the Google search case. This seems to be an unnecessarily simplistic reading in light of both Supreme Court doctrine and the text itself.¹⁵ Whatever tool could restore the lost competition in an efficient and effective way should be considered as a remedy, and those that are most effective and least disruptive should be chosen. We follow this approach in the argument that follows.

In considering contractual remedies, it is important to distinguish between three types of benefits that Google search can obtain by contracting with a device or browser vendor or wireless carrier:

- Exclusive: a benefit that is only available to Google;
- Default: Google search being pre-set as the search engine that will be used absent proactive user intervention to switch to a competitor, and
- Preinstallation: Google search being pre-packaged into any new version of the device or browser.

To illustrate, a hypothetical *exclusive* would be if Google obtained an agreement that no other search engine could occupy that same role (whether that is preinstallation or a default status or something else) on a device. A hypothetical *default* would be if Google obtained

15 See *Massachusetts v. Microsoft Corp.*, 373 F.3d 1199, 1231 (D.C. Cir. 2004) (en banc) (describing the goal of Section 2 remedies as “restoring conditions in which the competitive process is revived and any number of competitors may flourish (or not) based upon the merits of their offerings”).

an agreement that, for a normal place on a handset where one would input a search query, Google will conduct the search unless the user takes steps to change to a different search engine. A hypothetical *preinstallation* would be if Google obtained an agreement that handsets are to be delivered to users with Chrome (Google's browser, which defaults to Google search) already installed on the home page. A simple preinstallation, by itself, has no condition limiting the ability of rivals to also be pre-installed and no agreement that any service (such as an app) would default to that search engine.

Further, defaults and pre-installations can be either exclusive or non-exclusive. Google's contract with Apple, for example, ensures that Google will be the default search engine at *every* search access point on Apple devices; no other search engine can be the default at any of these points. Google thus has secured "exclusive default" positions on Apple devices. Similarly, when we think of the preinstallation of a browser, it is easy to see how a pre-installation can be exclusive (e.g., handsets must be delivered with Chrome and only Chrome pre-installed) or non-exclusive (e.g., handsets must be delivered with Chrome, but the OEM may pre-install any other browser as well). These are not mere distinctions in nomenclature; each of these agreements has a distinct competitive effect.¹⁶ It therefore is crucial in defining remedies to think clearly and precisely about the ways Google has secured advantageous placement in the past, and which in the future should be off limits.

As was explained during the trial, Google also currently contracts for preferential device placements of different kinds (central location on the home screen, "hotseat" placement, home screen location of Google applications folder, etc.).

We begin with the most obvious remedy in light of the court's findings: Google should not be permitted to enter any contract that *requires* a distribution partner to make Google Search the default or the exclusive search engine at any search access point on any device or browser, or to preinstall any app or widget that has the effect of defaulting users to Google Search (e.g., the widget, the browser), in exchange for any type of consideration. This prohibition would apply to Google's relationships with independent handset makers and browsers

16 Today's search market would look very different if Google had, for example, been able to secure default status on only *half* the search access points on Apple devices (i.e., "defaults"), rather than on *all* of the search access points (i.e., "exclusive defaults").

such as Safari and Firefox.

Consider first the impact of this restriction on Google’s relationship with Apple. Google could not contract to pay for an exclusive or default position on any iOS or macOS distribution channel. Apple could not sell off the default position to Google, but it could sell its default position to Bing. Apple could also enter with an Apple search engine. Both of these are more expensive options for Apple relative to sharing Google’s monopoly rents because Bing monetizes at a lower rate and is less popular, while building a search engine is expensive. Nonetheless, both options would generate conditions that would permit Google’s rivals, whether Apple, Bing, or a third-party search engine, to gain a foothold and begin to compete with Google.

Under the remedy, Samsung (a handset maker) could not be *required* by the terms of its Android contracts to exclusively preinstall or default to Google search. Like Apple, Samsung could sell its default search positions to Bing or develop its own search engine. Notice, however, that if Samsung tried to sell its default search positions instead of giving that revenue to Google, Google could simply raise Samsung’s cost for the Android operating system. This would both re-capture the revenue and punish Samsung for sponsoring a competitor, thereby forcing Samsung to abandon its plans to use a different search engine as the default on its devices. We discuss the Android ecosystem in more detail below.

Critically, however, prohibiting defaults and exclusives will not alone restore competition in our view because of the market position Google has achieved with its illegal conduct during the many years in which it has held a monopoly position. Simple preinstallation by OEMs of a Google Search widget on the home screen or Chrome would achieve very similar results to those of exclusive contracts. This is in part because of the high existing use of Google Search and Chrome and the power of those brands—if the Google Search Widget and Chrome remain sitting right there on the home screen, consumers will continue to use them out of habit and/or brand loyalty. The “stickiness of defaults” and consumers’ limited interest in installing rival software will also factor in. Even without a default or exclusive contract with Google, a handset vendor could opt to pre-install only Google Search, which would effectively give the consumer the choice of just using what is already on the device (Google) or putting in the effort to identify and install a rival search engine. In short, consumers are used to Google and it is high quality; even

absent contracts requiring exclusive defaults, for example, distribution partners are likely to simply make it the default at all access points in exchange for a share of search revenue, either as a result of an auction (which Google will always be able to win because of its high monetization rate) or as a result of a straightforward negotiation with Google.

We can look to the European enforcement experience for an illustration of this point. The European Commission in 2018 ruled that Google had used Android-related contractual restrictions to cement the dominance of its search engine¹⁷ the Commission order identified, and prohibited three specific restrictions: (1) the requirement that manufacturers pre-install the Google Search app and Chrome as a condition for the Play Store; (2) payments to certain large manufacturers and mobile network operators conditioned on the exclusive preinstallation of the Google Search app; and (3) an anti-forking restriction.¹⁸ The Commission recognized, however, that this would not alone restore competition; even absent the restrictions, OEMs might simply install Google search, thereby recreating the very market structure Google had achieved through the unlawful restrictions. Under European law, it then fell on Google to propose additional steps it would take—beyond simply terminating the illegal restrictions—to restore competition.¹⁹ Google in 2019 introduced a “choice screen” that allowed users to select the search engine that would appear in their default search box and in Google Chrome.

These remedies, both the new contracts and the choice screen collectively, did little to return competition to the search market; Google’s share on Android devices in the years following the order and the implementation of the choice screen remained virtually unchanged. Because users were accustomed to using Google (and because of various flaws in the design and implantation of the choice screens which were both carried out by Google), users continued to select Google Search. Simply banning the restrictions and giving users a choice, it turns

17 See Greg Sterling, *Google hit with largest-ever \$5 billion antitrust penalty in Android case*, MarTech (July 18, 2018), available at <https://martech.org/google-hit-with-largest-ever-5-billion-antitrust-penalty-in-android-case/>.

18 See Natasha Lomas, *Google gets slapped with \$5BN EU fine for Android antitrust abuse*, TechCrunch (July 18, 2018), available at <https://techcrunch.com/2018/07/18/google-gets-slapped-5bn-by-eu-for-android-antitrust-abuse/>.

19 See *id.* As described below, Google proposed and implemented a “choice screen” solution that suffered from various flaws that rendered it ineffective.

out, wasn't enough.²⁰ Indeed, one commentator observed that, "[a]s an antitrust remedy, the choice screen has not only failed to make the search market a more competitive space, it may even be reinforcing Google's dominant position."²¹

Consider also this thought experiment: suppose Apple and Samsung each said that they would offer to preinstall the best search engine they could find from among those that agree to give them 40% of search revenue. Suppose further that the preinstallation would be non-exclusive, meaning OEMs would be free to pre-install a different search engine or a browser with a different default search engine. Bing and Google both would agree to pay 40% of revenue to be preinstalled on Apple and Samsung. However, 40% of Google's search revenue will be more money than 40% of Bing's revenue because Google's data advantage makes its advertising more valuable. As a result, Apple and Samsung both would pre-install Google search because doing so will make them more money than they would make by preinstalling Bing.²² As regards Apple, the result would be identical to what we see in the market today, with Google and Apple splitting the monopoly search rents on iOS. In the Android ecosystem, Google would retain its monopoly position and its monopoly profits by adjusting the Android license fee to recapture any lost revenue. This reasoning illustrates how allowing Google to contract or pay for distribution, even without allowing it to contract or pay for defaults or exclusives, will likely perpetuate the status quo in search.

The key to maximizing the incentive for entry (if entry were the only goal) would be to prohibit Google from offering any payment *at all* to distribution channels like Apple. Apple would then fail to receive its annual \$20B payment. But it could earn back a fraction of that by

20 See generally George Nguyen, *Google's search choice screen had virtually no effect on search market share, perhaps by design*, Search Engine Land (Feb. 17, 2021), available at <https://searchengineland.com/googles-search-choice-screen-had-virtually-no-effect-on-search-market-share-perhaps-by-design-346167> ("As an antitrust remedy, the choice screen has not only failed to make the search market a more competitive space, it may even be reinforcing Google's dominant position.").

21 See generally George Nguyen, *Google's search choice screen had virtually no effect on search market share, perhaps by design*, Search Engine Land (Feb. 17, 2021), available at <https://searchengineland.com/googles-search-choice-screen-had-virtually-no-effect-on-search-market-share-perhaps-by-design-346167>.

22 And the court found that even if Bing offered 100% of search revenue this would be insufficient to make it more profitable for an OEM.

defaulting to Bing, its own search engine, or a new entrant. Samsung may appear to have the same incentive to preinstall Bing, but this is not the case; Google can claw back any revenue gained by Bing through the Android license fee.

There are important downsides to banning payments from Google, however. Economic theory would predict that the search revenue that Google shares today with distribution partners lowers the cost of phone service and handsets to end consumers and provides innovation and quality in browsers. These current benefits would be eliminated if payments are prohibited. If the court forbids Google from making these payments to OEMs and browsers, Google earns a windfall profit. Google simply keeps the \$26B that it would have paid Apple and others.

Banning payments from Google entirely also would have negative price and quality effects on the related phone service and handset markets, at least in the short term, because it would abruptly cut off the flow of billions of dollars in search revenue that otherwise would be shared with those channels. In the long term, as search rivals gain share and quality, we can expect that Google and its rival search engines will compete for distribution, renewing the flow of significant search revenue to carriers and handset makers. The carriers and handset makers, in turn, will compete for consumers by offering cheaper and better plans and handsets (due to the additional marginal revenue) and in this way, the profits from search will end up in the hands of consumers. But it may be several years before competition among search engines is sufficiently vigorous to re-open the spigot and allow search revenues to flow to these distribution channels at the volume they now see from Google.

Moreover, in the case of a sudden prohibition of all payments from Google, we can anticipate it will advertise to newly lucrative users to convince them to adjust their defaults to Google; a successful campaign of this sort would deprive the market of the benefits that otherwise would result from user experimentation, such as social learning, and improved quality of Bing and other rivals. In this scenario Google would continue to enjoy the full financial benefit of the installation and use of Google search that is carried out by users themselves and would not share its monopoly profits with distribution channels. Competition in search will not have meaningfully changed.

V. The Fundamental Conflict in Remedy Design for the

General Search Market

The discussion above highlights the difficulty in designing a remedy—a difficulty that is driven by a fundamental conflict: Google’s revenue-sharing payments to distribution partners *harm* the ability of rivals to enter, while Google’s revenue sharing payments to distribution partners *help* consumers by lowering handset and browser costs.

This observation suggests that there are two simultaneous dynamics a remedy must harness to create a new, competitive search equilibrium: entry and price competition for handsets. Entry in the short run will eventually generate price competition later. But the mechanism that creates price competition in the short run (revenue share to browsers, carriers, and OEMs for placement on devices) prevents initial entry. The temptation for the regulator is to shut down price competition for this reason; however, over time it is needed to bring the benefits of the resulting competition to consumers. We therefore identify two, related remedial goals:

Goal 1: A remedy should provide Apple (and others) an incentive to enter to compete with Google Search; right now, Google pays Apple enough so that, for Apple, staying out is more lucrative than entering.

Goal 2: A remedy should make rival search engines bid high revenue shares to get advantageous placement on handsets, browsers, and carriers, including default placements. Vigorous competition in the hardware market will turn that additional revenue into lower prices for handsets so the profits from search end up in the hands of consumers. In the browser market, the additional revenue will fuel quality, differentiation, and innovation.

One option for the court is to choose a remedy to fix entry at first (Goal 1) and, when there has been enough entry, turn to Goal 2 (price competition). However, this requires constant oversight by the court and quick responses to market conditions. If a remedy is hard-fought, one that changes mid-stream and perhaps unleashes follow-on litigation may not be in the public interest.

For this reason, we constrain ourselves to one set of rules that does not change over time or in response to entry. However, choosing a remedy that emphasizes only entry or only price competition, but

not the other, is unattractive. On one hand, choosing a remedy that maximally incentivizes entry requires banning payments by Google and causes financial gain for the company found to be an illegal monopolist. A remedy that raises Google's profits may undermine consumer and political support for antitrust enforcement. In addition, under this remedy, OEMs and browsers must choose a rival search engine if they wish to earn any revenue, and there is only one choice in the market today, Bing. All distributors will preinstall Bing and therefore almost all consumers will experience the sudden loss of Google search. This also may be hard for consumers to understand. Worse, the market power that Bing will gain due to this remedy means that, at least in the short term, it has no need to offer distributors a high revenue share to obtain a default position.

On the other hand, a remedy that delivers lower prices to users in the short term (allowing for distribution partners to share in search revenue) leads to the preservation of the status quo in search. If Apple and Samsung are permitted to accept payment from Google, they will announce the terms they require and make Google search preinstalled and easy to for consumers to choose. Entrants will once again be unable to outbid Google and will be excluded.

VI. A Remedy Proposal: Allow Google to Pay for No More than Half the Search Traffic

Perhaps the best way forward is literally the middle ground: Google can pay for half of the market only. We propose the following remedy design.

The bedrock condition of an effective remedy must be to prohibit Google from entering contracts that require any channel partner (device manufacturer, browser) to provide it with exclusive or default positions. Rival search engines are of course unaffected by the remedy and may enter such contracts and pay for favorable positions, including exclusive, preinstalled, and default positions.

If, however, a third party chooses for its own reasons to preinstall or otherwise favor Google search, Google should be permitted to pay that distribution channel (manufacturer, browser, or other partner) a share of the search revenue. However, the remedy would place three crucial limitations on any such arrangement.

First, the third parties should retain total freedom to deploy, or not, the Google

functionalities that default to Google Search (including the search widget, Chrome, Maps, etc.) as they see fit. Thus, the arrangements would be terminable at will by the third parties, who could cease using Google at any time and for any reason (other than those proscribed by law). Google should have no claim or expectancy relating to its continued placement, nor any claim to revenues generated by such continued placement. And, as long as Google Search is among the choices offered by the device or browser, consumers retain the right to easily change the default search engine on their device or browser.

Second, any such arrangement would be subject to a coverage cap: Google would be enjoined from sharing any of its search revenue for all searches that exceed 50 percent of the total search revenue of a partner's distribution channel. We have chosen 50 percent (of revenue, or of installs) because that allows a rival search engine to achieve the same scale of operations as Google. Any larger share for Google might preserve its dominance. If preinstallation is random, then 50% of users will deliver 50% of search revenue. If channel partners choose where to install each search engine, Google may be given to the highest-revenue users, in which case a small percentage of users could generate 50% of revenue.²³

Third, the revenue share that Google could offer would further be capped at 40 percent. The 40 percent share was revealed at trial to be the amount that Google pays Apple today.²⁴ By limiting payment to (a random) half of users, the coverage cap gives OEMs and browsers an incentive to go out and find another search engine that will give it revenue for the other half of users. The price cap stops Google from offering to pay 80 percent of revenue on its share of users and obtaining tacit support from the partner that enables it to serve the other half of the user base for zero revenue share.

The half of the business directed to search entrants will allow them to improve and then compete going forward for exclusives and defaults in any distribution channel. The simplest way to carry out the market share

23 Discovery can be used to determine what share of users (ordered by revenue) constitute 50%.

24 The revenue share is invariant to whether the partner preinstalls one app or a chain of Google apps such as Chrome and search.

cap is for the court to order the assignment to be random and then the Google cap would be 50% of users in a channel.

To effectuate this in the case of an order of random assignment, for example, the court could (a) order that any contract Google enters with a channel partner must specify that the partner transmit periodic installation counts (at Google's expense); and (b) prohibit Google from paying a revenue share in respect of any end users in excess of the 50% cap.

If a user in a channel that is at the 50% cap changes her default widget to Google from Bing, Google cannot pay any more in revenue and therefore the OEM cannot earn any revenue from that incremental user. This gives the OEM an incentive to act as an agent for rival search engines, urging users to use the preinstalled rival so that the OEM earns a revenue share on each user instead of hitting the cap.²⁵

A corporation that owns more than one channel (e.g., an OEM with its own browser) must make each individual user default to Google in both channels or none. In other words, Apple cannot preinstall the Google widget for half its customers and a Google default in Safari for the other half. An anticircumvention provision will likely be necessary to shut down any tricks played by channel partners and Google.

The more difficult method of assignment allows the channel partner to choose users, perhaps based on revenue generated, that get the Google default. The OEM or browser or carrier could determine which of their users get which search engine preinstalled, while keeping track and reporting to Google as before. If Google Search is the luxury option, OEMs may preinstall it on the most expensive handsets while the cheaper ones get rivals like Bing. This option is more informationally intensive for the regulator and has the possibility of altering product design as well as competition in the advertising industry. We therefore focus the remainder of the paper on the random assignment approach.

Regulation of the level of the revenue share seems necessary to us in light of the ability to play games. An obvious tactic for Google is to offer an 80% revenue share on half of consumers and accept the mandated zero on the other half. A tacit understanding with the

25 If an OEM has a user using Google search inside Chrome and another using Google search as a widget they each count as one user. Any preinstallation or favoring of Google search by the channel partner causes that user to count in the share of Google search users.

distribution partner not to preinstall a search rival will result in close to 100% of consumers on that partner using Google Search and therefore an average payment of 40 percent. Such an arrangement would be a circumvention of the remedy that would replicate the status quo. The remedy must further require that, in order for Google to pay a partner a share of search revenue, Google and the partner cannot have any other relationship that would allow the two parties to circumvent the payment cap. The structure of Google Android licensing is obviously a problem in this scenario, which we will come back to below.

An additional condition that could open the market slightly more would be to require that consumers be offered a choice of search engine whenever a channel partner has preinstalled Google search. This choice design (which the device or browser vendor could decide to implement as a choice screen or in a variety of other ways²⁶) would provide more agency for users who are in the 50% whose search revenue is accruing in part to Google and consequently are getting Google Search preinstalled. The choice architecture will have to be overseen by the technical committee comprised of experts approved by the court (and that can include or retain experts in the evaluation of choice architecture). Because choice screens are easy to manipulate, the remedy would prohibit Google from paying the partner if the choice design is not approved by the technical committee. In the alternative, the court could simply order Google to use the same choice screen design it is currently deploying in Europe, unless it offers to the technical committee a design that it can demonstrate better facilitates user choice.

Again, the European experience confirms the need for oversight of the design of any choice screen. As noted above, after the European Commission found Google's Android restrictions illegal, Google proposed offering choice screens purportedly to facilitate user choice and thereby to restore competition. Google, however, designed the choice screens and associated auction in a way that frustrated their purpose. After the Commission mandated a new choice architecture it changed Google's share very little. The European evidence demonstrates two important facts: prohibiting exclusive contracts with a choice screen does very little to shift share to rivals. Allowing Google to design the

26 See Gemma Petrie, *Beyond Choice Screens: Exploring browser choice design interventions*, available at <https://research.mozilla.org/browser-competition/remedyconcepts/>.

remedy made it even less effective.

Mandating a change in the way defaults and preinstallations are deployed will require a transition. The court could abrogate all existing contracts for search engine distribution to ensure all parties have the freedom to recontract in the new environment. At the time it comes into force, OEMs, carriers, and browsers will adjust their defaults for already-existing customers as well as new ones. The stock of handset users of search will experience a software update on the first day of the remedy, if not before, in order to reflect the new contracts and choices. If the OEM values a reputation for respecting user choice concerning their search engine, it could offer full search engine choice and accept the preferences of its users; it simply would not earn search revenue on Google users above the 50% cutoff level. To earn more search revenue, an OEM or carrier could combine a choice screen with in-kind benefits for users who choose non-Google search engines, e.g., free photo storage or a discount off the user's monthly service charge. Such benefits would raise the share of rivals, benefit consumers, and earn revenue for the carrier or OEM.

The bilateral relationship between Google and any type of channel partner would be regulated by the remedy described. Google could not pay a revenue share (or any consideration) for more than 50% of users of any channel partner. Google will require each of its partners to measure user-installs and share the figures regularly to facilitate audits of revenue share payments and compliance with the cap. Each of these partners will preinstall Google Search for some consumers and not for others. Because the channel partners are not permitted to coordinate with one another, a consumer who is exposed to different search engines due to different preinstallation strategies among their browser, OEM, and carrier, will learn about options in the marketplace. Google will be forbidden from gathering additional personal data from distribution partners about their installations (other than the minimum data necessary to permit payment and cap compliance audits) and forbidden from trying to coordinate those partners to preinstall Google's products for particular users. Payments must be on a per-user basis with no lump sum or nonlinear structure that might somehow disincentivize the OEM from promoting the use of non-Google search engines.

The coverage cap will significantly reduce the amount that Apple

receives from Google (likely by more than 50 percent, because the previous payment reflected the value of *total* exclusion of rivals). This disproportionate loss of revenue may force Apple to consider entry itself to re-capture the lost search revenue (Goal 1). Moreover, the rule will enable search engines *other* than Google to bid successfully to be the default search engines for the 50% of preinstallations on Apple and other devices where Google is forbidden from revenue sharing (Goal 2). Even better, if those rivals gain in quality, they can also be entrants (Goal 1). While rival search engines will pay Apple to be the default search engine for some or all of the 50 percent of users not covered by the Google revenue share, Apple may feel that its own product would produce both more revenue and a better user experience, and for this reason may enter.

VII. Preventing Google’s Use of Chrome to Maintain Its Monopoly

The role of the handset maker in moving users to rivals highlights the fact that the remedy just described will not work in the case of user-downloaded Chrome on desktop. And yet desktop users also suffer from blocked entry and lost competition by virtue of the vertical integration of the monopoly Google Search into Chrome on desktop. A remedy that can be used to help desktop users is to mandate that Chrome offer a neutral search choice design to its desktop customers with the details and cadence of delivery reflecting all that has been learned from choice screen mandates around the world. This would need to be coupled with behavioral remedies prohibiting Google from otherwise giving preference to Google search in any way, including by prompting Chrome users to switch to Google Search; degrading the performance, functionality, or user experience of search rivals in Chrome; adopting standards-incompatible functionality in Chrome that Google’s search rivals do not support; and preferencing Google Search in Chrome’s browser settings.

However, we do not think such a choice design remedy is strong enough to restore effective competition in search. First, it comes with a very long list of behavioral restrictions that must be policed by the court. Second, recall that Google initially created Chrome for desktop platforms, such as Windows and macOS, to direct users to Google

Search on platforms that it did not control.²⁷ Google has also used its monopoly position in search to drive adoption of Chrome by employing dark patterns nudging users to install Chrome and through prominent advertising for Chrome in Google Search ads.²⁸ Google uses Chrome to repeatedly push users to adopt services such as Chrome Sync and Sign-in, which provide vast amounts of browsing history data to Google from across Google and non-Google websites. According to Google's own disclosures, by default these services share browsing history data with Google to help Google improve search.²⁹ These rich data are unavailable to Google's search rivals and contribute to the quality of Google Search. Data also increase the monetization rate on Google search engine results in Chrome. These facts explain why Chrome for desktop is a critical channel for maintaining and expanding Google's search dominance. They also explain why we believe that restoring competition in search requires including Chrome in the Android spin off described below.

Failing to address Chrome in a potential package of remedies would leave a significant loophole for Google to maintain and expand its monopoly in search. In a scenario where remedies are applied to Google's contracts with third-party browser vendors and to Android but not to Chrome, Chrome would become the only search access point that Google directly controls that is not subject to remedies. At the same time, Google would likely face a loss of search market share, and Microsoft's Bing would likely see a gain, at least in the short run.

This foreseeable outcome would motivate Google to become ever more aggressive in maintaining and expanding Chrome's market position, both as a vector to maintain search market share, and as a defense against its most significant competitor in both the search and browser markets, Microsoft. In other words, the prospect of losing users to both Bing and Edge simultaneously may result in Google doubling down on pushing Chrome to consumers through means that are not provision of higher quality. For example, Google could use its presence via widgets, ad display, and analytics on large swaths of websites to

27 See <https://blog.google/products/chrome/chromes-turning-10-heres-whats-new/> ("You know the box at the top of Chrome that combines the search bar and address bar into one? We call it the Omnibox, and we built it so that you can get to your search results as fast as possible.").

28 See Google Chrome's Antitrust Paradox, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4780718.

29 See <https://support.google.com/websearch/answer/54068>.

display notices indicating to users that the sites would work better on Chrome, encouraging users to switch. If Chrome vertically integrates Google Search by default with no user choice and no prohibitions on Chrome self-preferencing Google search, such tactics will undermine other remedies designed to induce entry in search.

VIII. Severing the Link between the Android Operating System and Search

The remedy above requires Google to remove any requirement that Google Android licensees preinstall or position its search engine or make it a default in any search distribution channel such as the home screen or browser. However, simply changing these contracts is unlikely to make a meaningful difference to the behavior of Android licensees because their relationships with Google are characterized by complete dependence. There is only one mobile OS available for them to license, and, without an OS, they have no product to sell. If such a manufacturer sponsors entry of a rival search engine for 50% of its users, Google can simply worsen the terms on which that licensee gets Google Android to punish the manufacturer and force it to drop the rival.

We saw exactly this response in France a few years ago. Google raised the price of Google Android by 40 Euro from its previous price of zero. The company took this strategy because Huawei wanted to preinstall the rival search engine Qwant.³⁰ Google paired the 40 Euro price increase on the OS with a similar sized discount for OEMs who chose to preinstall Google search rather than Qwant. Demand for Qwant disappeared because the additional 40 Euro cost would have rendered the handset uncompetitive. This evidence illustrates that if the court chooses the same remedies that were tried in Europe, they are very likely to be ineffective.

Moreover, Google is not limited to formal contractual punishments for licensees that provide distribution for rival search apps. Indeed, there are all manner of services that Google provides licensees such as technical support, software updates, complementary apps such as YouTube, cloud credits, etc., that the manufacturer puts at risk if it

30 See Qwant's open letter to lawmakers (October 2021), https://ddg-staticcdn.s3.amazonaws.com/press/2110_Search_coalition_letter_calling_on_a_default_ban_in_DMA.pdf; see also Heidhues *et al.*, *More Competitive Search through Regulation*, *supra* note ____ at 940. (describing Google's response to Qwant's efforts to obtain placement on Huawei handsets).

opposes Google in search. Therefore, to successfully apply a remedy of forbidding exclusive contracts and stimulating entry, the court must decouple control over Google Android from Google Search. In combination with this de-coupling, the court must place a line of business restriction on Google so that it does not re-enter the operating system market for a number of years.

This de-coupling can be carried out either through a spin-off or through structural separation. We explain below why a spin-off is preferable to a court-ordered and -supervised structural separation.

Before going further, it is necessary to explain the origin and functioning of open-source Android. Android Inc. was launched in 2003.³¹ Its founders aimed to develop an operating system that was more responsive to user location and preferences than other then-extant operating systems. Android struggled financially until Google purchased it in 2005, for \$50M.³² Early on, Google signaled an openness to engaging partners in the development of a platform for mobile phones based on the Linux kernel. In 2007, a consortium of technology companies called the Open Handset Alliance (of which Google was a member) publicly assumed control of developing the Android operating system.³³ Leaders of this coalition (including Google executives and the founders of Android Inc.) unveiled the first version of a phone running on the Android operating system in 2008.³⁴

Since acquiring it, Google has envisioned and managed Android principally as a system for delivering its various products into the hands of consumers—a system that cannot be captured by any one particular participant in the mobile ecosystem.³⁵ Thus, even though Android's development now is steered by Google's Android Open Source Project (AOSP), rather than the Open Handset Alliance, the project's goals,

31 See "Google's Android OS: Past, Present, and Future", PhoneArena (Aug. 18, 2018).

32 See Lisa Eadicicco, *THE RISE OF ANDROID: how a failing startup became the world's biggest computing platform*, Business Insider (May 27, 2015), available at <https://www.businessinsider.com/how-android-was-created-2015-3>.

33 See *Industry Leaders Announce Open Platform for Mobile Devices*, Open Handset Alliance (Nov. 5, 2007), available at https://www.openhandsetalliance.com/press_110507.html.

34 See Transcript, *T-Mobile launches G-1, first Google Android phone*, CNET: Your Guide to a Better Future (Sept. 23, 2008), available at <https://www.cnet.com/videos/t-mobile-launches-g1-first-google-android-phone/>.

35 See *id.*

including the commitment that Android remain open source, have remained constant. Google currently describes AOSP's purpose as follows:

“[T]o make sure there would always be an open platform available for carriers, OEMs, and developers to use to make their innovative ideas a reality. We also wanted to avoid any central point of failure, so no single industry player could restrict or control the innovations of any other. Our single most important goal with the AOSP is to make sure that open-source Android software is implemented as widely and compatibly as possible, to everyone's benefit.”³⁶

A functioning handset, however, does not run on open-source Android alone. Many of the APIs and other code necessary for the operating system to function and interoperate with apps is proprietary to Google, and resides, for example, within Google Play services. This is why we have defined “Google Android” to include the open-source code overseen by AOSP along with whatever other code is necessary to make a functioning handset, wherever that code resides, including in Google Play services and the Google Play store. Indeed, because a fully functioning handset requires more than just the open-source code managed by AOSP, OEMs take out a license for proprietary code controlled by Google.

An Android divestiture would proceed in two steps. In the first step, Google would incorporate a new, independent nonprofit—for now we will call it NewCo. Google, as the incorporator, would appoint an independent board of directors and create a mission statement similar to the one that exists today for AOSP. Google and the government plaintiffs both could submit a slate of board nominees; the Court would choose individual board members from those slates.³⁷ Terms could be limited—three years for example—and staggered. Open seats could be filled in a manner similar to that used to select the initial board. We envision that board members would represent various types of constituents within in the Android ecosystem—app developers and handset makers, for

36 See Google, AOSP Frequently Asked Questions (FAQ), *Why Did Google Open the Android Source Code?*, available at <https://source.android.com/docs/setup/about/faqs>.

37 This process would encourage Google to nominate individuals who truly are independent, for fear the court will simply appoint the government proposed slate wholesale.

example—all of whom would represent companies with a financial interest in maintaining a vibrant Android ecosystem. In this way, the NewCo board could reflect an updated version of, and have the same incentives as, the old Open Handset Alliance (the exception being that Google would have no representation on the NewCo board). In addition, the court and the United States would require that the mission statement of NewCo promote competition in search, which would further bind both the board and management.

Second, Google would need to contribute to NewCo what we have been calling “Google Android,” namely the sum total of code necessary for the proper functioning of handsets, including the open-source code, and certain proprietary code that Google currently is developing independently for Android but has not yet contributed to the AOSP.³⁸ In addition, the Google Play Store itself would be part of NewCo. This transfer is necessary because Google, at the time of the spinoff, will have code or features it has not yet contributed to AOSP but instead has placed in the Play Store and also, a store is needed to complete the license package. All the code needed for apps to run correctly, including Google Play services and the Google Play Store, therefore, would become the property of the independent NewCo.

Some APIs and other necessary code may be located in yet other apps, while innovations that occur during the remedy phase, such as AI extensions to Android functionality, may manifest themselves in other places. Determining precisely what code ought to be contributed to form a fully functional OS requires technical expertise. As has been done in the past, the court should create and rely on a technical committee to advise on what must be contributed to ensure that OEMs can license a fully functioning OS from NewCo without the need to contract directly with Google for particular features or functionalities that developers expect.³⁹

38 See *AOSP Overview*, Source, available at <https://source.android.com/docs/setup/about> (last visited Sept. 1, 2024).

39 The U.S. District Court for the Northern District of California recently ordered the creation of a technical committee to help oversee compliance with an injunction issued after a jury found that Google, among other bad acts, illegally monopolized the app store market. See *In re Google Play Store Antitrust Litigation*, MDL Case No. 21-md-02981-JD (N.D. Cal. Oct. 7, 2024) (Dkt. 1016) (Order on UCL Claim and Injunctive Relief). Only three people will comprise that technical committee. We think the breadth of issues the technical committee will be required to address in the search case demands a substantially larger technical committee—one that includes engineers, technologists, competition lawyers, experts in computer-human interface design, etc.

Because Google has maintained AOSP in the same manner for many years, there already is a functioning unit (albeit one currently controlled by Google) with people experienced with, and processes designed for, a mission that is practically purpose-built to take on the role of a new home for the divested operating system. Google’s own description of how it manages the Android Open Source Project suggests that the people currently managing AOSP easily could continue their current mission, independent of Google. Google says, for example, that it has “committed the professional engineering resources necessary to ensure that Android is a fully competitive software platform.”⁴⁰ These resources, already committed to Android, presumably could simply remain with the newly spun-off entity. Using these dedicated engineers, NewCo can continue to innovate so that the Android OS remain competitive with Apple’s iOS.⁴¹

Google also asserts that it “treats the Android project as a full-scale product development operation and strikes the business deals necessary to make sure great devices running Android make it to market.”⁴² Thus, AOSP already has the core of a marketing and sales function built into it. In other words, even though Google controls Android, AOSP already is relatively self-sufficient⁴³ and achieves its goals on its own. Finally, the

40 See AOSP Frequently Asked Questions (FAQ), *Why is Google in charge of Android?*, Source, available at <https://source.android.com/docs/setup/about/faqs> (last visited Aug. 30, 2024).

41 As a next best option, the court could identify the assets that should be transferred to NewCo, and auction them to a for-profit buyer. Such a solution, however, generates administrative and incentive problems the creation of a new non-profit would skirt. As an example, a for-profit buyer would, at least in the short term while rivals remain in their infancy, have a financial incentive to structure its licensing arrangements to encourage OEMs to continue advantaging Google (on account of Google’s high monetization rate, which would flow through the revenue share to the OEMs and potentially back to the for-profit Android). Because a for-profit Android would face this and various other incentives that might conflict with the simple purpose of the non-profit NewCo (i.e., maximizing the utility of the Android OS for all who use it) and undermine the goal of spurring new entry, court supervision of a for-profit Android necessary will be more intensive than supervision of the non-profit NewCo.

42 See AOSP Frequently Asked Questions, <https://source.android.com/docs/setup/about/faqs>.

43 We claim no expertise in Google’s organizational chart, especially in light of a recent reorganization. See <https://www.theverge.com/2024/4/18/24133881/google-android-pixel-teams-reorg-rick-osterloh>. Some of the people who ought to be offered employment in NewCo to ensure a seamless transition of the Android OS into its new corporate home may work in a variety of units and functions within Google. The court can use an implementation committee to help identify the personnel who should be encouraged to join NewCo.

goals of AOSP as articulated today are fully compatible with the remedial goals of returning competition to search and handsets: AOSP's "single most important goal" is "to make sure that open-source Android software is implemented as widely and compatibly as possible, to everyone's benefit."⁴⁴

Another option to accomplish the decoupling is for the court to mandate the creation of a subsidiary of Alphabet that would hold the Google Android OS that we have described above. This structural separation would allow the OS to stay within the Alphabet corporation, but it would be strictly walled off. The U.S. Federal Communications Commission used this solution when it sought to protect competition in the burgeoning data processing market. After a series of inquiries in the 1960s and 1970s, the FCC mandated that AT&T (and other common carriers of a certain size) could *only* enter the unregulated data market through fully separate subsidiaries. The FCC reasoned that AT&T's anticompetitive practices prevented "free and fair competition between communication common carriers and data processing companies" and that "appropriate regulatory treatment of these concerns requires a maximum separation of activities which are subject to regulation from non-regulated activities involving data processing."⁴⁵ These requirements were termed "maximum separation" safeguards; their stated goal—and their ultimate effect—was to ensure competition in the data processing market.⁴⁶

44 See AOSP Frequently Asked Questions, <https://source.android.com/docs/setup/about/faqs>.

45 See Final Decision and Order, *In re Regulatory and Policy Problems Presented by the Interdependence of Computer and Communication Services and Facilities* (First Computer Inquiry), 28 F.C.C.2d 267 (1971) (Computer I Final Decision) (1971 FCC LEXIS 2066) paras. 9-10 ("[T]he furnishing of such data processing services by carriers should not inhibit free and fair competition between communication common carriers and data processing companies or otherwise involve practices contrary to the policies and prohibitions of the anti-trust laws...[A]ppropriate regulatory treatment of these concerns requires a maximum separation of activities which are subject to regulation from non-regulated activities involving data processing.") (internal quotations omitted).

46 See Amendment of Section 64.702 of the Comm'n's Rules & Regs, (Second Computer Inquiry), 77 F.C.C.2d 385 Para. 12 (1980); 1980 FCC LEXIS 188 *389 ("We find that only AT&T and GTE present a sufficiently substantial threat such that they should be required to establish separate corporate entities for the provision of enhanced services and customer-premises equipment. We will not require any other underlying carrier to form separate entities for the provision of these services and CPE.").

More recently, Congress in the Telecommunications Act of 1996 imposed strict structural separation between local and long-distance providers to bring more competition to the telephone market for both local and long-distance service.⁴⁷ These prior structural separations can provide models for what structural separation might look like here.

A. A New Nonprofit to Hold and Control “Google Android”

In our view, the simplest and cleanest remedy is for the court to order Google to spin off the entity that controls AOSP with the necessary other assets and then to deposit the component parts of the OS into the nonprofit NewCo, as outlined above. If such a spinoff were set up as a for-profit corporation, it would have the financial incentive to exploit its vast market power, either directly through Android licensing, or through search, or through a different, and as yet undiscovered method of monopolization. The shareholders of such a corporation would pressure management to exploit its market power as soon as line of business restrictions or technological changes in AI permit. This would very likely generate the need for a repeat of a similar antitrust case in the near future. In addition, the risk of future anticompetitive behavior by this extremely powerful corporation will stimulate other players in the ecosystem to invest in risk mitigation and perhaps hesitate to invest in projects that rely on Android. The imperfect ability of a court to control such an entity as time goes on creates a risk that any improvements in search competition due to the spinoff are transitory.

Because of the tremendous market power inherent in the Google Android OS, some court supervision of even a nonprofit NewCo’s practices will be needed. But these restrictions are far fewer because there is no profit incentive to overcome and there are no shareholders agitating for the company to exploit its power. To prevent recreating the problematic situation that caused the antitrust violation, NewCo would be restricted from expanding into the search business. Licensing fees

47 See 47 U.S.C. § 272(a)(1) (“A ... local exchange carrier ...may not provide any service described in paragraph (2) unless it provides that service through one or more affiliates that ... are separate from any operating company entity that is subject to the requirements of ... this title; and ... meets the requirements of subsection (b) [including that the separate entity operates independently, maintains separate books and records, is managed by separate officers, directors, and employees, obtains separate credit, and documents any transactions with the long-distance provider in writing that is subject to public inspection]”).

would be non-discriminatory and linear in the number of devices to give small licensees the same cost profile as large one. The Google Play Store and Chrome would be part of the licensed Android OS without any requirement on how an OEM uses them.⁴⁸ The license fee would be required to be FRAND to ensure widespread use as well as support of ongoing R&D. The court would rely on the same technical committee it uses to oversee the divestiture process to later advise it on FRAND terms. Court oversight will remain as a backstop.

Forking of Google Android using AOSP would be permitted as long as any new OS is clearly labeled with a different name and distinguished. Forking has the possibility of confusing consumers if they are unaware of the need to use apps that run on a particular OS. A NewCo license ensures that official Android continues to work as a coherent ecosystem. As is done by Google today, NewCo would review the Android build of a particular OEM and approve it as authorized. NewCo would review the apps that developers write for the Android OS in exchange for a reasonable fee. The Play Store would allow an authorized OEM to distribute certified apps and consumers would be confident that they would work correctly. Today, about one billion Android devices are sold each year. A modest per-handset license fee would support the budget of NewCo.

This environment would give manufacturers the security of licensing the operating system they are accustomed to (including all the APIs necessary for a well-functioning device) at a regulated price. The engineers and other employees who maintain and advance on the development of Google Android could move to NewCo, as described above.⁴⁹ OEMs could then bargain over search engine placement and percentage of search revenue to be paid to Google without fear of losing access to a competitively priced operating system. An OEM could

48 The absence of tying or other licensing conditions would mean that handset makers could install rival stores and users could download such stores.

49 There will be complexities in determining which Google employees from which divisions should be offered the chance of employment with, and encouraged to join, NewCo. Moreover, determining the terms on which such employees will be permitted to leave Google and join NewCo may add to these complexities, especially for those employees whose compensation includes incentive compensation, stock options, and the like. These problems are all solvable, however. The Court could order that all contingent options be deemed vested as of the date an employee departs Google for NewCo, for example. And the technical committee can help identify, by name and/or job title, those Google employees who should be offered positions at NewCo.

install a competing search engine like Bing as its default if it offered more search revenue and this competitive pressure would raise the payments that Google makes to OEMs.⁵⁰ Consumers would pay less for handsets because that higher level of search revenue earned by OEMs would be competed away in handset prices. Thus, a larger share of what now constitutes monopoly profits for Google would find its way into consumer pocketbooks.

Even with NewCo controlling Android, Google would still control Android apps that are extremely popular and, arguably in the case of YouTube, lack true competitive substitutes in the market. When contracting with OEMs for search engine placement or revenue sharing, Google could continue to bundle its other apps with search when negotiating with OEMs. At the outset, this would amount to Google leveraging its search monopoly to secure preinstallation or prominent placement of other Google apps. This strategy must be prevented in the remedy by requiring Google to offer its other apps and services in an a la carte fashion without any tying or bundling.

Another tactic that seems likely is that Google develops a cool new feature for a popular app like YouTube. The catch is that the feature requires a modification to the OS to run properly, and Google encourages OEMs to install the patch so that their users can enjoy the YouTube features. OEMs that install the OS modification are effectively using a forked version of Android. This strategy would undo the openness of the new Android and restore Google's leverage over OEMs. The technical committee could identify such forks and recommend that they be contributed to NewCo, and the court could so order. This process enforces the line of business restriction that is a key part of the remedy.

It is important to note that Google's control over the mobile operating system is existential; there is no other OS that handset makers can license to sell a handset today in the US. While there are substitutes for other functionalities used by OEMs, there is no substitute for Google Android. This is the reason why either spinning out Android or placing it in an independent and firewalled division of Alphabet is necessary.

50 Note that the 40% revenue share cap and 50% user cap proposed earlier would still apply to any Google contract with an OEM in this setting.

B. A Messier Option: Court-Supervised Structural Separation

If the court dislikes the divestitures into NewCo option, it could instead opt for structural separation. Either way, a solution is needed to block Google's current ability to degrade a manufacturer's access to the operating system or raise its price, and in that way coerce the manufacturer into preinstalling Google search. Forbidding exclusive or default contracts will be ineffective if such coercion is possible. The link between the operating system and the search business must be severed.

In a structural separation solution, Google would transfer the operating system (Android, Google Play services, the Google Play store, and any other relevant APIs), Chrome, and all associated employees into a division or subsidiary of Google that is strictly separated within Alphabet, rather than to an independent entity. Because the division or subsidiary would still have an incentive to make as much money for its parent as possible, the separation would have to be accompanied by the imposition of additional court-ordered conditions beyond those required for an independent entity. There likely would need to be a commercial committee as well as a technical committee to aid the court's oversight.

Necessary conditions that likely would require significant oversight would include a prohibition on bundling or tying between the OS and any other Google service or benefit, including those that would be managed by other Google divisions. For example, Google would be prohibited from leveraging its control of Google Maps or YouTube with a handset maker in order to coerce use of Google Search. License fees would need to be simple linear contracts without discrimination and where any additional services are offered a la carte to all licensees. Because informal communication could aid in coercion, a firewall would be needed to prevent communication between divisions. Employees would not be permitted to move from the OS division directly to other parts of Google and vice versa.

The price of the OS would have to be regulated in order to prevent it from being set very high to punish licensees who do not install Google search, or simply set very high to replace the revenue formerly earned from Google search. The court would have to assess what a fair, reasonable, and non-discriminatory price is for Google Android and ensure this was the price charged. Determining FRAND would likely require an accurate measurement of the costs of running Android. The OS division would maintain strictly separate accounting so that the court

could determine its costs of R&D and see the prices it was charging to each customer. No infrastructure or fixed costs could be shared, nor would joint procurement be permitted. The monitors would need the authority to obtain information of any kind to ensure compliance with all the restrictions imposed by the court.

If this solution worked, it would again allow a handset maker to license Google Android from the OS division for a fair, non-discriminatory price without any conditions attached to it. Then that handset maker could bargain, in theory, freely and separately with another division, Google Search, over the terms on which it would preinstall the service in a widget or browser.

As compared to a spin-off, structural separation seems to us likely to impose a significantly larger burden on the Court. As the technology of search, its costs, and demand evolve, Google will ask the court to adjust the remedy, necessitating further hearings and collection of evidence. The direction of Android investments, both in terms of technological choices as well as functionalities will critically benefit the remainder of Alphabet. The management of Android and decisions on issues like which functionalities to include in the operating system will devolve into arguments about what benefits Google's business over rivals' business. A Google division—even if walled off—retains an incentive to act in ways that advantage its parent, necessitating significant court oversight to ensure the separate division does not coordinate with other divisions of Google in ways that frustrate the very purposes of the separation. NewCo, by contrast, will be an independent nonprofit with a mission and governance that do not give it these problematic incentives.

Oversight activities, such as enforcing a line of business restrictions, will be easier in the NewCo structure. Determination of FRAND rates will similarly be easier. Because it does not have shareholders to claim excess profits, an independent NewCo is more likely to have the incentive to set a FRAND price that is similar to the one the court would choose than would a for-profit company. The court could permit NewCo to determine and impose those rates on its own, subject to challenge only if its rate structure appears problematic. A Google division, by contrast, has a strong incentive to choose a rate that increases the profit of the for-profit corporation and is *not* FRAND. Therefore, the court will likely need to set up a rate-setting process that is more closely supervised, and the final rate specifically approved. The FRAND rate will

change over time, necessitating regular repetition of the process, as is done in music licensing, for example.⁵¹

Whether the court chooses a spinoff or structural separation, Google will need to be enjoined from re-entering the OS or browser market for a period of years. Given Google's existing portfolio of apps, services, and platform products, and the open-source nature of Android and Chromium, these restrictions will need to be carefully crafted to ensure that Google does not remain in these markets under the guise of other Google software. And the court will have to explicitly forbid Google from attempting to re-create its original market power by some form of contract that undoes the remedy.

IX. Separating Chrome from Search

Although the desktop browser market is not characterized by the same level of coercive power that Google can currently exert over OEMs due to their dependence on Android, foreclosing the ability of Google to use Chrome to maintain and extend its search monopoly through purely behavioral remedies may prove to be exceedingly difficult. If a court-appointed monitor empowered to police all the possible ways that Google might seek to give Google Search advantages in Chrome or use Chrome to reinforce its existing advantages in search, disputes from Google's search rivals will frequently land back in the court. There are numerous and potentially subtle ways Google could try to advantage its own search engine in Chrome: using the vast network of websites with Google presence to encourage users to switch to Chrome's search engine in ways unavailable to search rivals; degrading the performance of rival search engines; reducing support for web standards and compatibility in ways that specifically harm rival providers of both browsers and search (Microsoft and, perhaps in the future, Apple); making it harder to use other Google services in Chrome if Google search is not set as the default; and many more.⁵² Gathering evidence and conducting

51 See generally Ed Christman, *Copyright Royalty Board? Statutory? Mechanical? Performance? A Primer for the World of Music Licensing and its Pricing*, Billboard (Aug. 18, 2016), available at <https://www.billboard.com/music/music-news/music-licensing-pricing-primer-copyright-royalty-board-statutory-mechanical-performance-7476929/>.

52 See Zak Doffman, *Google Chrome Secretly Shares Your Device Data—With Google*, Forbes (July 12, 2024), available at <https://www.forbes.com/sites/>

the analysis needed to distinguish cases where Google is violating its commitments from cases of healthy competitive behavior across the adjacent browser, search, and web services markets will occupy the court for years or decades. Identifying potential self-preferencing behavior in Chrome would require a level of technical diligence exceeding the other scenarios where Google has a contract with a third-party browser vendor or OEM that could be scrutinized for violations.

A cleaner and simpler approach would be to include Chrome in either of the structural remedies described above, incorporating the Chrome software, employees, and other assets into the spun-off NewCo or subsidiary. A structural remedy for Chrome would erase the incentive for the browser to preference its own search engine, because Chrome would be structurally separate from Google search. As an independent browser, Chrome for Android would be part of the package licensed by OEMs. Those OEMs would be free to contract with non-Google search engines or with Google search for pre-installation, default positions, or revenue sharing according to the rest of the remedy obligations imposed on Google. Chrome would be designed to work in a neutral way with competing search engines. Contracts between Chrome for desktop and Google Search would be subject to the same restrictions and obligations as those between Google and any other browser vendor, including choice design obligations. The need for a monitor to police each novel form of self-preferencing Chrome might attempt to provide to Google search would be eliminated.⁵³

zakdoffman/2024/07/12/new-google-chrome-warning-for-microsoft-windows-10-windows-11-users/; Catalin Cimpanu, *Google secretly logs users into Chrome whenever they log into a Google site*, ZDNet (September 23, 2018), available at <https://www.zdnet.com/article/google-secretly-logs-users-into-chrome-whenever-they-log-into-a-google-site/>; Mia Sato, *The biggest findings in the Google Search leak* (May 31, 2024), available at <https://www.theverge.com/2024/3/24/167119/google-search-algorithm-documents-leak-seo-chrome-clicks> (“Google Search representatives have said that they don’t use anything from Chrome for ranking, but the leaked documents suggest that may not be true. One section, for example, lists “chrome_trans_clicks” as informing which links from a domain appear below the main webpage in search results. Fishkin interprets it as meaning Google “uses the number of clicks on pages in Chrome browsers and uses that to determine the most popular/important URLs on a site, which go into the calculation of which to include in the sitelinks feature.”).

53 Separating Chrome from Google could benefit competition and choice in related advertising markets as well. Chrome currently supports a wide variety of industry-standard and proprietary protocol features and APIs that websites owners and ad tech companies (including Google’s advertising businesses) use to facilitate ad targeting, delivery, and measurement. These include mechanisms based on standardized functionality such

Observers may question whether NewCo would have both the resources and the incentive to continue to maintain the desktop browser. The facts gathered during the trial provide strong evidence that resourcing is unlikely to be a concern. Mozilla spends about \$450M annually to operate the Firefox browser.⁵⁴ If we assume an independent Chrome for desktop would cost approximately that much to operate, this amounts to about 2% of Bing's current search revenue. Given how few resources are needed to operate a competitive browser relative to the total search advertising market, an independent Chrome interested in monetizing its browser through search revenue sharing seems like it would have options available to do so.

Cross-platform effects would likely further incentivize NewCo to stay in the desktop browser market. Chrome on Android would continue to be an essential component of NewCo's overall Android offering to OEMs. The versions of Chrome that run on Android and desktop are both based on the open-source Chromium project and share a significant code base.⁵⁵ Browser vendors in the market today are driven to have their users on mobile adopt the same browser on desktop and vice versa, as evidenced by their promotional activities. Browser syncing that allows users to sync their browsing history, bookmarks, and passwords across devices is a table-stakes feature offered by every major browser vendor.⁵⁶ There is no reason NewCo's incentives would significantly deviate from these realities of the market today.

as cookies, image (pixel) tracking, and local or session storage. Chrome currently also employs a number of proprietary APIs and features, several of which have been developed as part of Google's Privacy Sandbox initiative, that are used by Google's ad businesses and other ad tech companies. If Chrome were to be divested, NewCo would have independent discretion to decide which features and mechanisms to provide to support online advertising, just as all other browser vendors currently do. NewCo's decisions about feature support would be shaped by concerns about the browser business, the web, and the mobile ecosystem, and would no longer be shaped by a parent company running the world's largest online advertising business.

54 See <https://assets.mozilla.net/annualreport/2022/mozilla-fdn-2022-fs-final-0908.pdf>.

55 See <https://www.chromium.org/Home/>.

56 See Chrome sync, <https://chrome.google.com/sync>; iCloud for Safari, <https://support.apple.com/guide/icloud/what-you-can-do-with-icloud-and-safari-mm9b8da4f328/1.0/icloud/1.0>; Microsoft Edge sync, <https://support.microsoft.com/en-us/microsoft-edge/sign-in-to-sync-microsoft-edge-across-devices-e6ffa79b-ed52-aa32-47e2-5d5597fe4674>; Firefox sync, <https://www.mozilla.org/en-US/firefox/features/sync/>; Opera sync, <https://www.opera.com/features/sync>.

X. Additional à la carte Remedies

The remedies described thus far are intended as a package because they are interrelated and depend on one another to succeed. Banning exclusives won't pry open the market unless paired with at least a partial ban on payments; that ban must be partial rather than total in order to spur entry; and with respect to searches conducted on devices reliant on the Android OS, none of this will dismantle Google's dominance so long as Google continues to control Android. In this section, by contrast, we offer remedies that we believe, even standing alone, will help generate competition in the search market.

The interrelated suite of remedies described above takes aim at Google's distribution channels, but it also is critical that the final remedies package directly addresses the court's finding that the fixed costs of running a search engine are high and that the cost of entry helped Google's anticompetitive conduct to be effective.

There are two straightforward ways for the court to lower the cost of entry into general search. Among the simplest and least controversial of these remedies is a requirement that Google license its web index to other search engines on FRAND terms. Crawling the entire World Wide Web every day to maintain an index is costly and therefore acts as a significant barrier to entry. Moreover, there is little welfare benefit generated by spending the money needed to create more than one web index. Requiring that Google license its index on FRAND terms will promote entry by rivals. A FRAND licensing fee will compensate Google for the cost of sharing the index with competitors and for its continuing efforts to maintain the index, while greatly lowering entry costs for rivals. Of course, Google should be prohibited from conditioning such licensing in ways that make it difficult for licensees (who necessarily will be Google's search rivals) to use the index as easily and efficiently as Google does, or in ways that prohibit use of the index in innovative ways. We want rivals to differentiate by, for example, incorporating the index along with their own scraping data or machine learning technologies to generate new products and search experiences for users.

Given Google's monopoly position in search, its search index is a critical control point over what content is available to be delivered in search results and how that content is monetized.

As long as Google's index retains this control point status, behavioral remedies will be required to ensure that Google does not leverage its

monopoly position in search to preference its other products, including Gemini and potential successor Google AI models. The court should prohibit Google from tying the web crawling that it does to build its search index to any other crawling or uses of the crawled data for other purposes. In other words, independent websites should be able to make their sites available to be crawled by Google for search indexing purposes without being required to consent to their data being used to train, contribute to, or otherwise improve Google's AI models. Google has already begun entering into contracts that condition the availability of site content in search results on its ability to train AI models with site data.⁵⁷ Given the court's findings, remedies are needed to address this point of leverage.

The second method of lowering the fixed costs of entry into search is to require Google to share click and query data with rivals. Google could charge a cost-based fee for such data. The European Commission has already mandated that Google share data in Europe. However, for the sharing to be effective, the queries cannot be too aggregated or too old, or they will not be useful to a small entrant trying to train its algorithm. The court can delegate to the technical committee decisions concerning privacy and speed so that sharing of click and query data helps entrants improve their quality. The technical committee will be able to study the European experience and improve upon it (of course with right to appeal to the court).

In light of the rapid changes that characterize technology markets, it may be difficult for the court to determine the length of time any given remedy should apply. A new technology combined with a clever entrant might create competition quickly. Equally, because of Google's enormous market power, scale advantages, and entrenched position, it is possible that it will be very difficult for entrants to gain share. We suggest the court pick a relatively long timeframe in which a remedy applies, combined with an ability for Google to bring evidence to the court that the search market has become competitive. The court could adjust the timing of remedies in accordance with the evolution of the market, with the burden borne by Google.

57 See <https://www.404media.co/google-is-the-only-search-engine-that-works-on-reddit-now-thanks-to-ai-deal/>.

XI. Final Thoughts

Given the importance of the search market and duration of Google's monopoly, remedies that restore the lost competition will need to be powerful, targeted, and complete. The interlocking suite of remedies we put forward are likely to significantly transform the search market. The finding of liability logically generates the steps needed to restore competition. Only if competition is firmly re-established and protected will the remedy unleash innovation and benefit consumers.

PART VI

Pro-Competitive Industrial Policy

It seems likely that society will identify competition problems in digital markets for decades to come. Policy makers have three tools they can use to improve outcomes in underperforming markets. It is critical to use the right tool in the right situation or governments risk regulating markets that don't need it or granting subsidies that are wasteful. Once competition policy is expanded beyond competition enforcement to encompass both regulation and policies to combat harmful externalities, most competition problems can be solved.

Chapter 13.

The Three Pillars of Effective European Union Competition Policy

10 September 2024*

Executive Summary

Competitiveness is a region's ability to achieve high productivity, attracting businesses, creating jobs and fostering innovation. It stems from efficiently using resources, is driven by competitive markets and is supported by three pillars: competition policy, procompetitive industrial policy and regulation.

Competition enforcement keeps markets competitive by preventing harmful practices such as cartels, dominance abuse and anticompetitive mergers. While there is a push to relax European Union merger laws to promote European 'champions', this risks inefficiency and monopolisation. Instead, expanding the EU's market size while maintaining competition is essential, especially in digital sectors.

Procompetitive industrial policy addresses market failures and fosters well-functioning markets by targeting externalities such as worker training, R&D and infrastructure. Unlike outdated policies favouring national champions, this approach should focus on EU-level initiatives that promote competition and deepen the single market. This allows firms to achieve scale and drive innovation.

Monopolised markets, whether state-created or naturally formed, need regulation to ensure competitive outcomes. The EU Digital

* Previously published as Fiona Scott Morton, "The Three Pillars of Effective European Union Competition Policy," *Bruegel Policy Brief*, 19/2014, <https://www.bruegel.org/policy-brief/three-pillars-effective-european-union-competition-policy>.

Markets Act (DMA) aims to enhance competition and innovation on digital platforms by mandating data sharing, non-discriminatory access and interoperability. However, resistance to compliance on the part of tech giants poses enforcement challenges. Without effective and timely enforcement, trust in the law will erode, stalling innovation and reducing Europe's global regulatory influence.

When competition enforcement, procompetitive industrial policy and monopoly regulation work together, markets benefit consumers, firms and workers. Effective EU policy will refine competition enforcement, regulate monopolies where necessary and redesign state aid strategically to create welfare-enhancing markets. This comprehensive approach ensures an economy that serves its people and remains competitive.

1. What Is 'Competitiveness'?

There is an undercurrent of belief in Europe that competition and industrial policy are in direct conflict, and competition enforcement is a culprit in lagging European Union competitiveness. The French and German governments, for example, in a 'manifesto' issued in 2019, argued for changes to European Union competition rules including merger control modifications to give companies the best chance of scaling up, and a right for EU governments meeting in the Council of the EU to override decisions of the European Commission – the EU's competition enforcer – in certain cases (BMWK and Ministère de l'Économie, 2019). The issue was taken up by European Commission President, Ursula von der Leyen, in her 18 July 2024 pitch for reappointment for a second term:

I believe we need a new approach to competition policy, better geared to our common goals and more supportive of companies scaling up in global markets – while always ensuring a level playing field. This should be reflected in the way we assess mergers so that innovation and resilience are fully taken into account (Von der Leyen, 2024).

This Policy Brief clarifies the relationship between competition and industrial policy, and shows that there is in fact no tension. It explains that there is no conflict between enforcement of EU competition laws and scale (see section 2.2). A conflict between competition and industrial policy only arises when industrial policy is deployed destructively. Industrial policy is one of the tools that can create competition, though it can also be used to suppress competition, and pro-competitive industrial

policy supports and complements competition enforcement. Merger control can already incorporate a loss of resilience and innovation when those factors threaten to harm consumers.

Competition policy meanwhile goes beyond enforcement and encompasses industrial policy, which can help grow market size, in turn helping firms achieve scale. Competition policy also encompasses state aid, whether that aid comes from governments inside or outside the EU. Government subsidies distort the level playing field and make it more difficult for unsubsidised but efficient firms to obtain scale. All of this matters because competition is key to achieving Europe's goals. Firms are driven to be productive when they face vigorous competition for the business of consumers. Without improving quality, reducing prices and innovating they will not attract consumers when those consumers have other places to buy. When those firms succeed in attracting consumers, they attain scale. Those customers can be attracted from within the EU or from outside, particularly when the barriers to competing across borders are minimised.

High productivity makes a region competitive for both firms and inputs like capital and workers. The 'competitiveness' of a region is this productivity (Pinkus *et al*, 2024). It attracts the businesses that deliver the tangible outputs people want to consume and the jobs they want to fill. Such environments are also attractive for innovation and the formation of new businesses and industries. Productivity comes from using resources in the most efficient manner possible in order to produce greatest quantity and value of outputs. The best way we know to achieve that goal is well-functioning competitive markets. A major role for the state, therefore, is to create conditions conducive to such markets and protect competition within them.

The current debate over industrial policy in Europe often seems to interpret competitiveness to be a country 'winning' against other countries because it hosts bigger firms. But competitiveness does not require a region's large firms to hold the 'number one' position in their respective industries. Ideas like first place versus second place are imported from domains such as sport and do not translate well into an economic context. Having said that, large fixed costs and scale are important to productivity in many industries, and therefore the ability to grow in absolute size is critical for governments to facilitate, as this Policy Brief discusses. A government should want to attract and nurture

such productive firms, as well as the complementary assets and input markets that tend to grow with them. But competitiveness does not involve politicians collecting large firms in the way men did in past ages with silver arm rings, ships of the line or space rockets. Instead, the best policies focus on a different goal – the well-being of society – while the birth, growth and longevity of productive firms in a jurisdiction are a result of succeeding at that endeavour.

Markets for goods, labour and capital that run smoothly, competitively and at scale will benefit every size of firm. But entrepreneurs and small firms may benefit especially because they cannot create these markets themselves. Thus, productivity reinforces itself by enabling entry and incentivising innovation, creating yet more competition and choice. Competition policy plays a pivotal role in this framework because markets will not serve consumers, current enterprises or the next generation of innovative firms unless they are competitive.

Competition policy helps a region's economy grow in three ways. First, competition enforcement as it is carried out today protects existing competition in markets that already work reasonably well. Prohibiting an anticompetitive merger falls in this category. Second, procompetitive industrial policy enables broken or poorly performing markets to exist or perform better, become competitive and deliver good outcomes for consumers. Subsidies for green technologies and worker training in a new technology fall into this category. Regulation, the third leg of the stool, limits harms from already monopolised markets that have structures that cannot be made competitive. Regulation of a water or electric utility is a familiar example.

All three of these activities constitute competition policy, as can be seen today when the European Commission's Directorate-General for Competition enforces Articles 101 and 102 of the Treaty on the Functioning of the European Union, the EU Digital Markets Act (DMA, Regulation (EU) 2022/1925) and state aid rules.¹ However, competition policy manifests itself in other parts of government, such as when agencies setting spectrum policy or banking regulations invite or block entrants. Competition policy operates analogously at the member-state level in local contexts.

1 Competition enforcement is usually considered to be the process of ex-post enforcement against firms the government believes have violated competition law.

This framing makes it clear that these three tools of enforcement, regulation and industrial policy are complements, not conflicting alternatives. Each tool fixes a different type of problem that arises in capitalism, a problem that limits the ability of competition to deliver the outcomes consumers want. Governments can repair each problem with a tool designed for that problem without disrupting competition by favouring anyone undertaking. When governments use all three tools of competition policy, they serve existing and nascent firms, and deliver the productivity and employment that consumers and workers want.

2. Competition Enforcement

Competition enforcement aims to ensure that markets that generally function well remain competitive and fair. It does this by preventing structures and conduct that could undermine competitive dynamics and that would harm trading-partner welfare. EU competition rules control the formation of cartels, abuse of dominance and mergers.

2.1. Basic Competition Enforcement

Explicit collusion involves arrangements to engage in price fixing, division of markets, bid rigging, predatory pricing, pay-for-delay, price parity and other practices that block competition and raise prices.² Such practices obviously harm consumers as well as businesses buying from a cartel, or suppliers to a cartel, and no region will obtain high productivity without prohibiting this sort of conduct.

EU merger rules prohibit mergers when they may harm competition inside the EU; analysis must centre on the options available to EU consumers. Lessened competition for European consumers reduces quality or enables monopoly prices through unilateral and coordinated effects.³ Allowing close competitors to merge also threatens the creation and exercise of monopsony power by increasing the bargaining power of the merged entity over its supply chain, creating entry barriers for other buyers and reducing wages and working conditions in labour markets.

2 See Article 101 TFEU, <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX%3A12008E101%3AE N%3AHTML>.

3 See Article 102 TFEU, <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX%3A12008E102>.

The emerging narrative in Brussels argues that concerns about competition and its benefits should take a back seat to the desire to have national champions that will – after receiving large subsidies – demonstrate the competitiveness of Europe in areas including telecoms, banking and cloud computing.⁴ But what is achieved when merger control is abandoned instead of making improvements to expand or deepen the single market? Without competition enforcement, rivals will merge within a member state to achieve operating synergies. There will be a French telecom monopoly and a German telecom monopoly. There will be Dutch banking monopoly and a Spanish banking monopoly, each of which will go to their governments for subsidies and will be too big to fail. But none of those monopolists will have the scale they should have because they do not operate across a market of 27 countries with 400 million consumers – which is the market size available to telecoms and banking firms in the United States and China. A heavily-subsidised small French telecoms firm will not have low enough costs nor strong enough incentives to expand into Brazil to take share from US, Chinese or Brazilian competitors. Meanwhile French consumers must bear monopoly prices and monopoly quality. This is why continuing to enforce merger laws is critical to European productivity.

Those merger laws do not prevent European firms from achieving scale. First, firms can merge across member-state lines in industries such as telecoms or supermarkets. When undertakings already sell across the whole EU, there are two types of mergers. In the first, the relevant market is only Europe because there are no substitute products available from outside the EU. In this case, a merger between significant EU rivals can harm competition. Today that merger will be prohibited. As a consequence, those firms will have to compete vigorously on the merits ‘at home’. That competition creates the capabilities and efficiency that will allow a firm to succeed globally – as is shown by many globally successful European firms today – and raises EU competitiveness.

If, on the other hand, the market is global and foreign competitors operate in the EU, then a merger of two local firms might not lessen competition materially for European consumers. The analysis of such

4 Emanuel Macron, the President of France, is one example. See The Capitol Forum, ‘Despite a Weakened Macron, His Fight for European ‘Champions’ Vs. Competition Enforcement Isn’t Going Anywhere, Experts Say’, 23 July 2024, <https://thecapitolforum.com/weakened-macron-fight-for-european-champions/>.

a merger will reflect that reality. European market shares will not be very relevant in an investigation if competition is global because they do not reflect the true state of the choices available to consumers. Such a merger will likely be permitted when competition from outside the EU is robust, for example, and the global shares of the merging firms are relatively small.

Merger control is perceived by some in Europe as being inconsistent with development of European national champions. The idea is that the combination of two medium-sized European firms can create a large European firm that will then compete with a large Chinese or American firm on a global scale, and this will bring benefits to Europe that two medium-sized firms could not. The Alstom-Siemens proposed merger blocked by the Commission in 2019 had elements of this narrative.⁵

This idea has superficial appeal, but when confronted with the framework actually used to analyse mergers, the logic breaks down. First, current law permits European firms to work together to compete outside Europe. This is because European competition law is concerned only with protecting European consumers and not others located elsewhere. So, European competitors that want to work together to procure inputs or build a business outside Europe are free to do that. For example, European enterprises could join together to market a product in North America or procure raw materials in Africa.

Second, as described above, merger control will not prohibit mergers where competition is vigorous. If Siemens and Alstom face competition in Europe from Chinese and American firms, then global competition operates in Europe, in which case the merger would likely be approved. Alternatively, global competition is not present in Europe, in which case the European firms do not face a threat from the foreign rival, and preserving competition at home requires that they operate independently.

It may be that competition in the EU occurs between local firms today, but future expected competition will come from growth and entry of, for example, Chinese firms, and the European firms are merging because they anticipate this challenge. There is no conceptual prohibition against making an argument that competitive conditions

5 See Konstantinos Efstathiou, 'The Alstom-Siemens merger and the need for European champions', *Bruegel Blog*, 11 March 2019, <https://www.bruegel.org/blog-post/alstom-siemens-merger-and-need-european-champions>.

are about to change and this is a good reason for a merger. The difficulty for the regulator is that any pair of merging parties stands to gain from making such a claim, and therefore many will do so whether or not it is true. The claim that competition is intensifying and competitors are about to enter is made very often by merging parties. Parties have ‘cried wolf’ so often that regulators do not find the claim credible unless backed by good evidence. If the regulator has evidence that entry by foreign firms with scale advantages is happening or is imminent, this may render an EU transaction harmless. If the entry is a hypothetical idea far in the future, then it is likely the firms should wait to use this reason to justify a merger until there is better evidence of the foreign entry and its nature.

A region’s ability to care for its people depends not only on the levels of income, but also on risk. Shocks in the form of pandemics, floods and wars can cause price spikes and shortages. These harm the firms concerned, but in a competitive market, much of the harm from risk falls on consumers. Greater resilience in the face of shocks incentivises investment, allows both firms and consumers to spend less resources on insurance of all kinds and makes a region more competitive. Competition enforcers may find that a particular merger will reduce resilience and raise risk in a way that harms consumer welfare as the term is normally used. For example, the claimed efficiency of a merger could be the consolidation of the parties’ supply chains into one. If all goes well this will reduce costs, but with pandemics, floods or wars arriving over time, the reduced resilience will cause higher prices and shortages. On average, prices may end up being higher, especially when considering that a shortage means consumers must buy a different good or none at all.

While this theory of harm is also forward-looking, it is amenable to analysis using past distributions of shocks (weather, war) and modelling of supply and demand. A regulator can use economic tools to estimate outcomes and their distribution to determine if, on net, consumers are harmed, even if prices would be lower in good times. The existing frameworks for merger review can already accommodate this theory of harm.

2.2. The Importance of Scale

Every year a larger fraction of the economy falls into a category where scale is important to achieving productivity. This segment clearly includes digital platforms, but also increasingly includes other industries as data becomes more important in helping firms increase quality and reduce costs. When economies of scale are present, a firm's larger scale leads to lower costs.

Minimum efficient scale (MES) refers to the smallest scale at which a company can operate while matching the lowest costs in the industry. A firm smaller than this absolute size will have higher costs than its larger competitors. The relationship between MES and the size of the EU market varies greatly across industries and over time. When MES is small relative to the size of the EU market, competition works well. When MES is large relative to the EU market, there is a conflict between sustaining competition among multiple firms and achieving efficiency, as explained above. Alternatively, if there is fair trade (without distortionary state subsidies) then the market can be global and support more than one firm at MES, restoring the role of competition.

Some believe that competition policy must be weakened to permit firms to achieve the scale necessary for commercial success.⁶ In particular, suppose that for European firms to succeed they must be able to grow to a larger size in Europe. The first route to growth is through a larger market in which to expand without encountering barriers. This allows for greater scale without any reduction in the number of firms. Conditional on market size, there are two ways to achieve scale. One is by engaging in exclusionary conduct so rivals do not grow. Competition laws are designed to prohibit this type of conduct because it reduces welfare. Another way to grow increases welfare – offering a superior product that consumers prefer relative to rival products. The resulting sales create low costs due to scale economies. This latter approach does not require weaker antitrust or merger control, but rather excellent products and execution on the part of the company.

The EU policy that is most helpful to firms with excellent products

6 For example, see Sven Smit and Jan Mischke, 'Scale matters more than ever for European competitiveness. Here's why', McKinsey Global Institute, 15 May 2024, <https://www.mckinsey.com/mgi/overview/in-the-news/scale-matters-more-than-ever-for-european-competitiveness>.

is expansion of the effective size of the single market and assurance of robust competition within it. A large home market becomes a place where multiple successful firms can first gain traction and scale on a path to becoming global. Because antitrust enforcement is used sparingly by European enforcers, enforcement rarely stops firms from growing and becoming large even if they engage in illegal conduct. Of course, if they have engaged in illegal conduct, antitrust enforcement is desirable. Procompetitive strategies should never be the target of antitrust enforcement. Mistakes are possible, but these cannot be numerous because of the small total number of antitrust cases brought by enforcers. Additionally, recent abuse of dominance cases (outside energy) have overwhelmingly been focused on non-EU firms, such as Intel, Google and Microsoft.

The longstanding problem of natural monopoly remains, however. If MES is large relative to the EU market and the good is not traded, there is a conflict between sustaining competition among multiple firms and achieving efficiency in Europe. Society can either accept some inefficiency due to small scale in order to achieve competition (there being none coming in from outside the EU), or achieve efficiency through a monopoly, which is then regulated. Good regulation of such ‘natural monopolies’ is better for consumers than allowing these companies to exercise their market power. While newer monopolies, such as digital platforms, are more complicated than older ones such as water utilities, there remain many tools and rich data regulators can use in the design process and in measuring outcomes. An alternative policy to regulation is to open up borders to enable a larger market, provided however, that the trade is free and fair so that it restores the role of competition.⁷

2.3. Challenges in Competition Enforcement

There are some challenges to regulating markets well that are either simply difficult to solve with competition enforcement or need a new tool fit for purpose if the EU wishes to solve them. Tacit collusion, for example, may be easier to create or sustain in an environment of high inflation and therefore may be a bigger problem than in past years, and yet there is no good EU-level tool to tackle it. Consumers with

⁷ The EU Foreign Subsidies Regulation (Regulation (EU) 2022/2560) is designed to ensure competition from firms located in other countries is fair.

behavioural biases such as excess inertia or excess optimism may not be able to discipline competition in some markets because they do not choose the most competitive product. Again, there is no obvious tool for a competition enforcer to use to reform these markets so that consumers are not exploited.

Controlling mergers between small firms or startups and established incumbents has become more important to competition enforcement over time. Because some of these low-turnover mergers are competitively significant at EU level, it is crucial that the European Commission should have an accepted and settled way to obtain jurisdiction over them.⁸ Without such jurisdiction, established monopolists can simply acquire the rivals that threaten them, provided they identify rivals early enough when they have little revenue. An exciting disruptive entrant may well have a high market capitalisation and little revenue. A tool is needed particularly because innovative and disruptive products can be identified by the monopoly incumbent more quickly than by the regulator and – without advance notification requirements – purchased before the regulator realises there is a problem. Once the small firm has been acquired, it is in the interest of the incumbent to end the innovation competition between the two parties – to the detriment of consumers. Weak powers of review prevent the Commission from reviewing these mergers, which is a grave threat to innovation.

3. Procompetitive Industrial Policy

Competition policy protects competition in markets that generally work. When the government intervenes to fix broken or poorly performing markets and improve competitive conditions, this is industrial policy (Juhász *et al*, 2023). The goal of procompetitive industrial policy is to bring more valuable markets into existence and ensure they are competitive, so that they deliver good outcomes for society.

The idea of industrial policy is not new. The name we know it by is ‘state aid’ though this does not connote a strategic purpose for the aid in the way ‘industrial policy’ does. The classic, and discarded, form of industrial policy is for the government to hand out a large subsidy to a well-connected firm, which is then supposed to become a national

8 The EU Court of Justice ruled out the process used by the Commission in the Illumina-Grail merger. See judgement in C-61½2 P - Illumina v Commission, 3 September 2024, https://curia.europa.eu/juris/liste.jsf?num=C_61½2&language=en.

champion. Such programmes rarely work and are a waste of taxpayer resources, in addition to distorting the single market. This is why state aid is regulated in Europe and why it is regulated by the competition authority. The old style of industrial policy – subsidies to well-connected incumbents – has cemented opposition to industrial policy in many quarters. However, there are important market failures in significant industries, and these market failures sometimes prevent these industries from existing at all or working well. The potential gains to society from a procompetitive industrial policy that fixes those externalities are significant (Goldberg *et al*, 2024).

3.1. Scale in the Single Market

Changes in the external environment make the payoff to European scale higher than in the past. The quickest solution for achieving scale for European firms is to ensure there is market across the 27 EU countries rather than many small markets.⁹ In telecoms, the lack of common regulation of spectrum means that the economies of scale that might otherwise be achieved from operations in many member states are missing. Banking and financial services regulations prevent a true single market in capital. High-speed rail networks do not cross country borders smoothly. Energy markets are likewise separated. The reason for lack of scale is not merger control, but insufficient harmonisation within Europe.

Policies for deepening the single market are akin to a physician's advice on weight loss: the answer is always the same, diet and exercise. While patients and politicians would prefer a quick and easy solution, the only thing that works is difficult: harmonise regulations and rules so firms can operate one business efficiently across many member states. One approach to speed up the process could be to create a new regulator and set of regulations that belong to all member states ('a zeroth regime'), compliance with which allows a firm to operate in any member state.¹⁰ Abandoning competition enforcement will not work at all. Indeed, it would be counterproductive because industrial policy subsidies would then be spent by firms that did not feel competitive pressure to be efficient.

9 Letta (2024) made this point.

10 While this idea has appeared in several places badged as the '28th regime', given the likely future growth in the number of EU countries, it seems prudent to place this regime in the 0th spot, rather than 28th so that its name does not need to change.

3.2. Examples of Pro-competitive Industrial Policy

Pro-competitive industrial policy should be deployed at EU level to help with deepening the single market. Such a pro-competitive industrial policy is comprised of programmes that target specific externalities and articulate where the externalities come from, what harm they cause and how each externality can be mitigated or neutralised (Mazzucato *et al.*, 2023). The discipline imposed by this explicit analysis helps prevent wasted expenditure and highlights policy tools that may be missing, but needed.

Examples of externalities are the positive spillovers from worker training, climate externalities, the gains from industry agglomeration that requires coordination among suppliers, producers, workers, and infrastructure. EU-wide policy designs that overcome these externalities could include subsidies for worker training, government support for infrastructure and zoning or coordination on a standard for a new technology. An important example of an externality is the unwillingness of private parties to invest in R&D when they cannot obtain property rights and will only capture a small share of the benefits, while much of the gains flow to competitors or society as a whole. EU-funded R&D can correct for underinvestment and stimulate entry of more innovators or catalyse an industry. However, it is important that any subsidies be competitively awarded and that conditions apply to the winners that promote competition. For example, a successful subsidised innovator might be required to license its innovation without charge to other innovators trying to build on the idea. In general, the public does not benefit when taxpayer funds create monopolies in areas that could have competition.

Another common form of externality is the need for agglomeration of an industry in one location to allow firms to benefit from shared workers, equipment, ancillary services and knowledge. A government can build infrastructure, fund universities that set up training programmes and subsidise investments of firms in that location. A third example is the insufficient incentive for manufacturers to invest in resilience. When a war or pandemic disrupts the supply of medications, losses are borne by both suppliers and consumers. However, because most of the surplus in the market is captured by consumers, manufacturers do not fully internalise the cost of supply disruptions and do not invest sufficiently to protect them. For example, society

might want a secure supply of surgical masks in case of emergency. But when times are good, hospital buyers seek to buy from the cheapest supplier even if that supplier is not located in Europe. Relying on one distant supplier may cause a shortage when the next crisis hits. Buying from multiple suppliers, including one or more inside the EU, is more expensive but more secure. Pro-competitive industrial policy includes solutions for problems like these to increase resilience at EU level.

Another problem is conflicting standards in EU countries in areas including spectrum management, banking and land-use planning. For example, countries might have different regulations for electric-car charging stations, or none at all. Such disparate standards may dissuade investment by private parties as they wonder which version will become most popular. A private standard-setting organization cannot change the rules in member states. However, EU industrial policy can gather industry participants to establish common planning rules, a common engineering template to handle high voltages and common application programming interfaces (APIs) between charging points and cars. Such a scheme has the benefit of being inexpensive because the private sector is ready to do the investment; but by the same token the private actors will not invest until they have certainty about what the standards are.

In cases in which member-state regulators must harmonise local standards, a modern EU industrial policy should add conditional incentives – whether subsidies, market access or something else – to the firms participating. These subsidies should come from an EU funding source and need not be large, but it is critical that they are conditional on a company's member state having reformed its regulations. Then an EU country that wants its firms to receive subsidies will face pressure to adopt the EU standard. If many states adopt the common template for a charging station, a construction firm would be able to tender to build the standardised charging station in thousands of locations across Europe. This would allow those suppliers to achieve economies of scale in equipment and construction. It is also important that such schemes be designed to be open in order to promote competition. For example, the APIs used by the charging station should be available to all sellers of electric vehicles in Europe, thereby encouraging entry of small new manufacturers. Furthermore, a huge network of charging points will increase adoption of electric vehicles, further incentivising investment and entry of new manufacturers.

Member states' previous budgets for corporate subsidies can be combined and re-targeted to create a European fund for pro-competitive industrial policy. Since money is scarce, subsidies should be targeted at important externalities and satisfy many EU goals at once: the green transition, innovation, resilience and so forth. They should all come with two conditions. First, any subsidised project must help deepen the single market so that firms inside and outside the target industry have access to more scale within Europe. Second, no project may create or maintain a monopoly (or other limit on competition) when more competitive market structures are possible.

All of these schemes would create markets that were not present before or improve markets that functioned poorly. In all cases, the scheme would increase competition and output. To reiterate, procompetitive industrial policy is entirely consistent with competition-policy principles. Because the two tools are used to fix different problems and both promote competition, there is no conflict between them.

4. Regulation of Monopolised Market

Markets that work well can be preserved through competition enforcement; markets that do not exist at all or are badly broken can be rebuilt with procompetitive industrial policy. There remains another competition problem: markets that are monopolies. Some of these monopolies were established by the state, such as those for water or other utilities. Other monopolies have arisen naturally from demand and cost conditions in that market. Still others have been created by the conduct of the firm itself in a way that could not be prevented by available antitrust enforcement. For example, a firm may engage in some conduct that helps it to obtain favourable network effects, the market 'tips', and then entrants can no longer gain traction, so a monopoly becomes entrenched. In all of these cases, procompetitive regulation is a tool society can use to require the regulated firm to produce (closer to) the competitive output and price, rather than the monopoly output and price. Such regulation is familiar from the telecommunications industry and similar issues such as access pricing and shared costs arise for digital platforms that are natural monopolies (or duopolies), regardless of whether or not they obtained their market power by violating a competition law.

Most regulation of utilities occurs at a local level or at the level of the member state. Some financial services are regulated at EU level. But the most recent example that is relevant for competition is the case of digital platforms. With the Digital Markets Act (DMA), the European Commission has taken on the task of creating more competition on, and for, digital platforms.

4.1. Regulation in an Increasingly Digitalised Economy

The DMA is a prime example of procompetitive regulation, adopted after antitrust enforcement of digital platforms failed to result in more competitive market structures, despite a decade of enforcement effort. The law's goal is increased contestability and fairness in the digital markets dominated by gatekeepers (meaning large, hard to avoid platforms) with entrenched positions.

Many of the DMA rules reflect learning from past antitrust cases, when available remedies did not sufficiently improve competition in that market. By shifting to a different instrument – economic regulation – the competition enforcer can require data sharing, the non-discriminatory access of business users to gatekeeper platforms, interoperability and the right of business users to disintermediate the gatekeeper, among others. The idea behind these rights is that enabling business users to get onto gatekeeper platforms and compete for users there – while being treated equitably by the gatekeeper – will improve competition on the platform, and that will benefit end users. In addition, certainty of the right of access to the platform and to end consumers stimulates business users to invest.

But such entry does not immediately improve competition for the platform. Instead, over time a business user that is permitted to grow and evolve, and whom the platform is not legally permitted to cut off or harm once it becomes a threat, may offer future competition for the next generation of platform. Such an evolution will lessen the harms from the current monopoly platforms and benefit business users. If core platform services comply with the DMA rules, then business users in the EU will have many more opportunities for innovation. Entry into app stores, digital wallets, messaging, gaming, entertainment content and more will be technically easier and more profitable, while the business users will be protected from discrimination and expropriation.

4.2. Challenges for Regulation

Regulators will have to be creative in order to retain the welfare-enhancing network effect characteristics of digital products while allowing competition. For example, competition in app stores will be enabled if the approval process for the app remains with the gatekeeper and all app stores are permitted to distribute any approved app. Then developers can continue to write for the popular operating system (and society gains the advantage of network effects) while having a choice of price and functionality in distribution. An additional element of this regulation would be to require that an operating system gatekeeper create a universal search function that permits a user to search their handset for an app by name in order to find out which stores carry it.

In some cases where network effects are present, it is not clear how the size of the market compares to the scale needed for efficiency and therefore whether or not that market can support more than one firm. In the case of search, Google paid large sums to keep rival search engines out of the market. If those search engines could only have offered an attractive product with a large market share, Google would not have needed to pay to prevent users from trying them. Likewise, Google testimony in antitrust proceedings in the United States asserted that the secret to Google's search quality is the algorithm, not the data.¹¹ This type of evidence raises the possibility that more than one search engine could reach efficient scale in the market today. Similarly, advances in artificial intelligence are surely changing the optimal market structure by altering the cost structure of search, the need for data and the benefits of differentiation, so a regulator does not know today what market structure will be feasible or efficient in AI. When there is uncertainty, a good first step is to open up the market to learn what entrants and consumers will do, and then tailor further remedies in response to the resulting outcomes.

The DMA is now fully in force but not all platforms appear to be complying with it. In spring 2024, the European Commission announced noncompliance proceedings against Alphabet, Apple and Meta.¹² More

11 Stefania Palma, Stephen Morris and Michael Acton, 'Google loses landmark US antitrust case over search dominance', *Financial Times*, 5 August 2024, <https://www.ft.com/content/8896a83a-74ac-49e5-9296-3545b1094919>.

12 See European Commission press release of 25 March 2024, 'Commission opens non-compliance investigations against Alphabet, Apple and Meta under the Digital Markets Act', <https://digital-markets-act.ec.europa.eu/commission-opens->

such proceedings seem likely as business users and civil society absorb the platforms' compliance reports and attempt to exercise their rights. If enforcement of the law does not compel compliance within a short period of time, the law will lose legitimacy with society. Gatekeepers will view it as optional rather than required and will simply hire large legal teams to fend off the need to change their business practices. European business users will become disillusioned about their ability to access consumers freely through the gatekeepers. Without feedback from business users the law is difficult to enforce. But business users will have no incentive to help the Commission with enforcement if their access to the platform is not improved and the gatekeeper retaliates against them for identifying noncompliance. Investment and innovation by business users will fall.

Europe cannot be the world's regulator if its regulations do not change real-world behaviour in a reasonable time period. Lack of progress in enforcing the DMA will also raise the question of whether digital platforms are too big and powerful to have to abide by EU law. This risk is a significant threat to the goal of obtaining competitive outcomes in these very important markets.

5. Conclusion

When the three pillars of competition policy are all present – enforcement, procompetitive industrial policy and regulation of monopolies – the result is an economy that works for the people.¹³ This toolkit allows a society to create and maintain the welfare-enhancing markets its firms and consumers want. Good EU policy will involve making necessary improvements to competition enforcement to keep it fit for purpose, regulating monopolies as necessary and re-designing state aid to make more strategic and useful.

Well-crafted industrial policy can be a good use of resources and it

non-compliance-investigations-against-alphabet-apple-and-meta-under-digital-markets-2024-03-25_en.

13 Interestingly, the legal basis for maintaining competition in Europe varies according to each of the three pillars. Articles 101 and 102 are part of the TFEU, as are the limitations on state aid. Regulation, by contrast, is mostly carried out at member-state level. When done at EU level, as is the case with the DMA, the legal basis is ensuring uniformity across the single market so that a business is free to operate in all member states. While interesting, the fact that the law and the economics are not exactly parallel does not undermine the arguments above.

certainly does not require competition enforcement to be weakened. Indeed, the public's money works more effectively when the firms it aids feel competitive pressure to use funds wisely. When the public projects that are given subsidies and infrastructure are chosen on the basis that they will open up and grow markets that are suffering from imperfections, and those projects are not used to anoint a winner and close those markets to others, society gains from industrial policy. This is not a subsidy race; rather, it is pro-competitive industrial policy.

When competitiveness is understood as the productivity generated by all of societies' resources, it is straightforward to see that competition supports competitiveness. The notion that competition policy is in conflict with 'competitiveness' is dangerously wrong. A large single market allows European firms to reap greater returns from innovation and investment and to achieve scale in a competitive environment. Subsidies or other aid targeted to achieve several social goals at once should be the most favoured in an environment with tight budgets. Firms facing competition have an incentive to use their resources wisely and carefully, which is what the public expects from taxpayer funds. The resulting innovation and efficiency will generate European competitiveness that benefits everyone.

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This collection of thirteen articles tackles a vital question for consumers across the world today: How can regulation help people, businesses, and communities benefit from digital platforms?

In 2022, the EU was the first large jurisdiction to adopt ambitious regulation of large gatekeeper platforms such as Google and Apple. The goals of the Digital Markets Act are fairness and contestability. The regulation aims to increase entry and competition on and among digital platforms by opening opportunities for businesses that rely on those digital platforms to innovate and grow. The rights the law creates include a level playing field, access to data, communication with users, ability to innovate, and disintermediation of the large platform, among others. These new rights are designed to allow all businesses to reap the rewards of their innovation and investment and will have far-reaching impacts on markets and consumers, both inside the EU and beyond.

The analysis in this volume covers the features of the law, its impact, its flaws, and its enforcement. We explain how existing economic research contributes to our understanding of digital policy and its impact, as well as where more research is needed. The authors are leading experts in law, economics, and technology from Europe and the United States with extensive experience in research and policy-making.

The articles were written between 2021 and 2024 and appeared originally as commentary, working papers, and journal publications. They provide an accessible economic framework useful for understanding digital platforms, the limited power of end consumers, and the toolkit available to regulators. Together the articles deliver a vision for digital platform regulation that is consistent with economic principles and therefore serves important goals such as competition, innovation, growth, and efficient allocation of surplus. The overarching theme of the collection is how to create and protect competition in complex digital markets using the minimum amount of interference—what some might call “light touch regulation”—while generating the maximum benefit for consumers and society.