ANTITRUST ANALYSIS OF SEARCH ENGINE DEFAULTS

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INTRODUCTION 2
I. INDUSTRY CHARACTERISTICS AND KEY FACTS 4
A. THE INTERNET SEARCH INDUSTRY 4
1. Search Engines *4*
2. Relevant Markets *5*
3. User Data and Scale Effects *5*
4. Nonprice Competition for Consumers *6*
B. SEARCH DISTRIBUTION AND DEFAULTS 7
1. Distribution Channels *7*
2. Search Engine Defaults Generally *8*
3. The "Stickiness" of Defaults *9*
4. Google's Contracts *11*
II. ECONOMIC ANALYSIS 13
A. DEFAULTS BY A DOMINANT SEARCH ENGINE 13
1. Static Effects *13*
2. Dynamic Effects *16*
3. Possible Procompetitive Effects *19*
B. DEFAULTS BY SMALLER RIVALS AND ENTRANTS 19
1. Static Effects *20*
2. Dynamic Effects *21*
3. Broad Defaults by a Small Rival? *21*
C. COUNTERFACTUALS AND BUT-FOR WORLDS 22
1. Counterfactuals Involving No Contractual Payments by Google *22*
2. Counterfactuals Involving Alternative Contracts *24*
III. ANTITRUST ANALYSIS 26
A. PROVING ANTICOMPETITIVE EFFECTS 27
1. Harm to Competitors and Consumers *28*
2. Harm to Competition and Causation ..... ***Error! Bookmark not defined.***

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3. Counterarguments and Objections *31*
4. What About AI? *40*
5. Discouraging Apple's Expansion into Search *41*
B. ASSESSING POTENTIAL PROCOMPETITIVE JUSTIFICATIONS 42
1. Improving the Quality of Google's Search Engine *42*
2. Default Agreements Give Consumers What They Want *45*
3. Increased Search Quality Competition *46*
4. Out-of-Market Benefits *46*
IV. REMEDY 51
A. SOME BASIC PRINCIPLES 51
B. TERMINATING THE ILLEGAL CONDUCT 52
1. The Scope of the Illegal Conduct *52*
2. Preventing Circumvention of the Termination of Illegal Conduct *57*
C. RESTORING COMPETITION 62
1. Restorative Remedies and Proof of Harm *62*
2. Breakup *63*
3. Compulsory Dealing Remedies *66*
4. The Chrome Default *72*
CONCLUSION 73

INTRODUCTION

This paper examines an important and timely issue at the interface of digital commerce and competition policy: search engine default agreements. These are agreements in which a search engine pays for the privilege of being the default option on a given "search access point"—a digital product that facilitates web search, such as a web browser or a dedicated search app.

A District Court recently found that Google's default agreements violated Section 2 of the Sherman Act.[1] Google paid Apple and other browser and device providers large sums of money in exchange for their agreement to make Google Search the default search engine on their browsers and devices.[2] We use that decision as a case study, and we assume some of the factual findings of the district court for purposes of our legal analysis. We have formed no conclusion as to the correctness of those findings. The purpose of this article is to provide a systematic, freestanding analysis of the potential

[1] United States v. Google LLC, 747 F. Supp. 3d 1 (D.D.C. 2024).
[2] *Id.*

antitrust implications of search engine defaults—the relevant economic concerns, legal issues, and possible remedies.

Our economic analysis of search engine defaults addresses both the possible anticompetitive effects of defaults and potential procompetitive benefits. It considers defaults implemented by a dominant search engine as well as those implemented by smaller rivals. And it considers both static (short-run) and dynamic (long-run) effects. Our analysis relies in large part on recent economic research related to search defaults, both theoretical[3] and empirical.[4]

We conclude that search defaults are not inherently harmful. They are a convenient and effective mode of distribution that can generate significant benefits. But defaults can undermine competition when a dominant search engine enters into default contracts and related agreements that in aggregate cover a very large share of search activity. The district court found that Google had obtained default status on a set of search access points that collectively accounted for about 70% of all search queries, with its default contracts accounting for the large majority of that.

In the short run, defaults create switching costs and other behavioral effects that discourage users from switching away from the default search engine to a competing alternative, especially on mobile devices.[5] By themselves, these switching costs and behavioral effects might not be sufficient to exclude rivals because many users at some point switch from the default search engine to another. But the competitive effects of default agreements are magnified by a data-driven algorithmic learning process, the effects of which we call "scale effects."[6] These effects play an important role in the antitrust analysis of search engine defaults.

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[3] *See* Erik Hovenkamp, T*he Competitive Effects of Search Engine Defaults*, J. LAW & ECONOMICS (forthcoming); Yongmin Chen & Marius Schwartz, *Assigning Default Position for Digital Goods: Competition, Regulation, and Welfare*, 73 J. INDUSTRIAL ECON. 426 (2025).

[4] Francesco Decarolis, Muxin Li, & Filippo Paternollo, *Competition and Defaults in Online Search,* AM. ECON. J.: MICROECONOMICS (forthcoming); Hunt Allcott, Juan Camilo Castillo, Matthew Gentzkow, Leon Musolff & Tobias Salz, *Sources of Market Power in Web Search: Evidence from a Field Experiment* (Nat'l Bureau of Econ Rsch., Working Paper No. 33410, 2025); Omar Vasquez Duque, *The Magical Number 2 (Minus Two): An Empirical Analysis on the Efficacy of Choice Screens to Increase Competition in Digital Markets* (unpublished manuscript, Oct. 2025), papers.ssrn.com/sol3/papers.cfm?abstract_id=5264993.

[5] *Google*, 747 F. Supp. 3d at 28.

[6] Such effects have recently received significant attention in the economic analyses of AI. *See, e.g.*, Andrei Hagiu & Julian Wright, *Data-Enabled Learning,*

In the long run, broad defaults by a dominant search engine foreclose rivals from default distribution, which is by far the most important and effective mode of search distribution. This undermines dynamic competition by chilling entry and investment by the dominant firm's rivals. Although we identify several possible procompetitive benefits of search defaults, we conclude that they are not sufficient to justify a very broad collection of default contracts by a dominant firm that substantially forecloses rivals from the default distribution channel.

Our legal analysis covers a range of issues that are relevant to evaluating search default agreements. One such issue is how to determine whether the default agreements caused sufficient harm to competition to be deemed to be unlawful when there is no way to know what would have happened in the but-for world. We conclude that the Court in *Google* was correct to apply a relaxed legal standard for causation but that reliance on that standard should constrain the kinds of remedies that might be imposed.

We also discuss remedies. We explain that remedies should be based on a court's findings of harm to competition. For example, in *Google*, the court found several anticompetitive exclusionary effects, but it did not find that Google would have lost its dominant position but for its default agreements. The remedies in such a case should thus be designed to restore rivals to the stronger positions they would have maintained but for the dominant firm's misconduct. More extreme remedies, like a breakup, are inappropriate.

I. INDUSTRY CHARACTERISTICS AND KEY FACTS

A. THE INTERNET SEARCH INDUSTRY

1. *Search Engines*

A general search engine takes a user query as an input and outputs a ranked list of relevant websites. For this, the search engine relies on two main technologies. The first is an index: a massive, carefully organized, and annotated database of most content on the web. Its job is, roughly, to provide a searchable map of the whole internet. Second, search engines rely on algorithms to identify and rank the most relevant websites from the index in response to a user's query. Due to the high cost of building and maintaining an index, nearly all search engines use either Google's or Microsoft's indexes.

Network Effects, and Competitive Advantage, 54 RAND J. Econ 633 (2023); AJAY AGRAWAL, JOSHUA S. GANS, & AVI GOLDFARB, PREDICTION MACHINES, UPDATED AND EXPANDED: THE SIMPLE ECONOMICS OF ARTIFICIAL INTELLIGENCE (2022); Joshua S. Gans, *Market Power in Artificial Intelligence* (Nat'l Bureau of Econ. Rsch., Working Paper No. 32270, 2024).

2. *Relevant Markets*

Search engines can be regarded as two-sided platforms, with a consumer side and an advertiser side. The Supreme Court's *American Express* decision held that antitrust markets for "transaction platforms" must include both sides of users within a single "relevant market."[7] That holding does not apply to ad-supported media platforms like search platforms.[8] Search engines are not transaction platforms because they do not facilitate simultaneous transactions between users on both sides of the platform. Rather they supply media content (search results) to one side while running ads for the other side.

The court in *Google* identified two relevant general search markets, corresponding to the consumer and advertiser sides of the search industry. It found that Google had monopoly power—and that it harmed competition—in both of them.[9]

Our analysis will focus on antitrust claims alleging anticompetitive harm on the consumer side of the market. We assume that the court correctly found that Google has monopoly power on the consumer side. We take no view as to whether the court's market definition and finding of monopoly power are correct. We also assume the correctness of other findings by the court about Google's share of the general search services market, which was found to be about 90% overall and 95% on mobile.[10]

3. *User Data and Scale Effects*

The quality of search engine responses to search queries depends significantly on the data available to the search engine. Search algorithms learn from data obtained from user activity and thereby improve the quality of the search results.

Search engine quality thus increases as the scale or number of search queries on the search engine increases. From an economic perspective, this resembles network effects.[11] Both data-driven scale effects and network effects imply that a firm's quality increases when it gains more users. This

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[7] Ohio v. American Express Co., 585 U.S. 529, 546 (2018).

[8] *Id.* at 544 (mentioning newspapers as an example of a two-sided media platform that is excluded from its market definition rule).

[9] *Google*, 747 F. Supp. 3d at 4. The other market in which the court found Google has monopoly power is the market for general search text ads, which is on the advertising side of the platform. *Id.* This paper is focused on the search services market on the consumer side.

[10] *Id.* at 156–57.

[11] *See, e.g.*, Andrei Hagiu & Julian Wright, *Data-Enabled Learning, Network Effects, and Competitive Advantage,* 54 RAND J. ECON 633 (2023).

relationship between quality and volume can reinforce market power and make entry more difficult.[12]

Google's search engine receives nine times the number of search queries of all other search engines combined. Google has used its scale advantage to increase the quality of its search services, and its search engine is widely viewed as superior to existing alternatives.[13] Google has an incentive to increase the number of search queries it receives, not just to provide more opportunities to sell advertising, but also to obtain data that will help it to maintain the superiority of its search engine.

The court found that these data-related quality benefits are subject to diminishing returns to scale.[14] In other words, the contribution of additional data to the quality of the search engines declines as the total amount of data available to the search engine increases.

4. *Nonprice Competition for Consumers*

Because search engines are free to users, search engines compete for consumers on the basis of nonprice factors. Such factors may be described as "quality," but there are different dimensions of quality. The most obvious one is the average quality of a search engine's results. That requires that the search engine identifies the most relevant websites and ranks them appropriately. This notion of quality depends both on the design of the algorithm and on the amount of data the search engine has available to improve the algorithm.

Search results are not the only thing that affect the user's search experience. A search engine's terms of service, which affect user privacy (among other things) may also matter to many users.[15] Therefore, search engines might compete partly on the basis of their privacy policies.

A search engine's advertising practices also affect user satisfaction. When a search engine exposes users to more ads or makes its ads more prominent or harder to ignore, it imposes "nuisance costs" or "attention costs" on users.[16] This does not require one to believe that all ads are harmful to

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[12] *See, e.g.*, Gans, *supra* note 6, at __.

[13] *See, e.g.*, *Google*, 747 F. Supp. 3d at 2.

[14] *Id.*

[15] *See, e.g.*, Yongmin Chen & Marius Schwartz, *Assigning Default Position for Digital Goods: Competition, Regulation, and Welfare,* 73 J. INDUST. ECON. 426 (2025).

[16] *See, e.g.*, Simon P. Anderson and Bruno Jullien, *The Advertising-Financed Business Model in Two-Sided Media Markets*, in 1 HANDBOOK OF MEDIA ECONOMICS 41 (2015); Michal S. Gal & Daniel L. Rubinfeld, *The Hidden Costs of Free Goods: Implications for Antitrust Enforcement*, 80 ANTITRUST L.J. 521 (2016).

consumers; that is clearly not true. But search ads are allocated based on advertiser auctions whose purpose is to maximize profit, not consumer wellbeing. The result is that consumers are often exposed to unhelpful ads that divert their attention from the more valuable organic search results or which potentially mislead the user by overstating the relevance of sponsored results relative to organic ones. The more market power a search engine has, the more able it is to run unhelpful ads without losing many users.

For these reasons, the absence of a price for consumers does not mean that search engines do not exert market power over them. But it does mean that the exercise of market power may take many different forms and may not be easy to quantify. For example, a search engine might exercise market power by altering its advertising practices or privacy policies in ways that boost its ad revenue while degrading the consumer experience.[17] Alternatively, it might eliminate features that consumers like, or it might invest less in maintaining the quality of its search algorithm. In general, a search engine's exercise of market power could involve almost anything that increases advertising revenues or reduces costs at the expense of user enjoyment.

B. Search Distribution and Defaults

1. *Distribution Channels*

Users can access a given search engine in a number of different ways, and there are several channels through which search engines are distributed. There are two layers to this. The top layer is hardware (smartphones, tablets, computers, and other devices), which typically comes with a preinstalled browser or search app (or both).

The next layer involves search access points—software products like browsers or dedicated search apps that can call upon search engines to search the web. Consider browsers, which will be our main focus. There are a number of ways that a consumer can access a given search engine through a browser, including manually navigating to the search engine's website or by using preloaded bookmarks. But the most common method by far is to type search queries directly into the browser's search bar.

What determines which search engine will be used when a consumer types a query into the browser's search bar? All modern browsers set some search engine (almost always Google Search) as the default search engine for search bar queries. Thus, the choice of search engine is initially made by the

[17] *See, e.g.*, Hovenkamp, *supra* note 3, at 6–7 (discussing the economic literature on this point).

browser, although the consumer can change it to a different search engine in the browser's settings menu.

An alternative possibility is a *choice screen*, which can be implemented either at the device level or at the browser level. This is a screen that requires the user to pick a search engine from a list of options, which will then be used for all future searches on that browser or device. Choice screens eliminate defaults by forcing the consumer to make an active choice.

Several foreign regulatory authorities have required Google to offer a choice screen on Android devices sold within their jurisdictions.[18] However, to our knowledge no significant browser or device company has *voluntarily* implemented a choice screen. One reason for this is that a browser or device company can earn significant money by selling default status to a search engine, as discussed further below.[19]

2. *Search Engine Defaults Generally*

Default status on a search bar is the most effective form of search distribution.[20] This is because the user need not take any extra steps to use the default search engine. Defaults are clearly more convenient for consumers than the old selection mechanism whereby a consumer had to navigate to a search engine's website every time she wanted to search the web. While a choice screen is almost as convenient for users as a default,[21] choice screens are not necessarily the best option for competition and consumers, as discussed later.[22]

When search engine defaults were introduced, default contracts were nonexclusive and did not entail payment by the search engine for default status.[23] But before long, search engines (mainly Google) began to pay vast sums for exclusive default status on the relevant browser or device. The

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[18] *See, e.g.*, Francesco Decarolis, Muxin Li, & Filippo Paternollo, *Competition and Defaults in Online Search,* 17 AM. ECON. J.: MICROECONOMICS 369 (2025) (studying the effects of these choice screen mandates).

[19] *See infra* Section I.B.4.

[20] *Google*, 747 F. Supp. 3d at 24 ("The most efficient channel of [search engine] distribution is, by far, placement as the preloaded, out-of-the-box default [search engine]").

[21] A choice screen requires an extra click, but only once, when the relevant browser is used for the first time. After that, the selected search engine is employed by default.

[22] *See infra* Sections II.B–C.

[23] *Google*, 747 F. Supp. 3d at 108 (noting that Google's first default contract with Apple permitted, but did not require, Apple to make Google Search the default on Safari and that Google did not pay anything to Apple).

amount of the payment is usually based on a specified share of the search advertising revenue.[24]

Not all defaults are achieved through contracts. Google and Microsoft are vertically integrated. Each controls both a search engine and a browser and can unilaterally give itself the default position on its own browser. Thus, Google Search is the default on Chrome, and Bing is the default on Microsoft Edge. In some cases, however, a firm's default placement is achieved through a combination of unilateral and concerted action. For example, Google obtains default status on Android devices by entering into Chrome preinstallation agreements with Android device makers and giving itself the default position on Chrome.[25]

3. *The "Stickiness" of Defaults*

Defaults are "sticky." That is, many users will stick with the default search engine, not because they have necessarily judged it to be better than competing alternatives, but simply because it is the default. For one thing, defaults create switching costs—or, in the district court's language, "choice frictions."[26] These switching costs reflect the hassle of going into the settings menu to change the default setting. By contrast, there is no cost to sticking with the default. This asymmetry creates a biasing effect. The court found that switching costs are significantly larger on mobile devices than on desktop or laptop computers.[27] Search defaults have thus become more significant over time, as mobile devices have come to account for the bulk of online activity.

A large body of behavioral economic research shows that defaults often have significant effects on consumer choice,[28] and expert testimony during the *Google* trial highlighted research showing that defaults can have a surprisingly strong effect on user choice by creating and reinforcing habits.[29]

A study by Decarolis, Li, and Paternollo, for example, found that the introduction of Android choice screen mandates in several foreign jurisdictions, which eliminated Google's defaults, always reduced Google's market share.[30] The paper suggests that the impact of a default on market

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[24] *Id.* at 101–33 (discussing Google's revenue sharing deals).

[25] *See infra* Section I.B.4.

[26] *Google*, 747 F. Supp. 3d at 29–30.

[27] In *Google*, the court found that switching costs are significantly larger on mobile devices than on desktop or laptop computers. *See id.* at 28–29.

[28] *See, e.g.*, Jon M. Jachimowicz, Shannon Duncan, Elke U. Weber & Eric J. Johnson, *When and Why Defaults Influence Decisions: A Meta-Analysis of Default Effects*, 3 BEHAVIOR PUB. POL'Y 159 (2019).

[29] 747 F. Supp. 3d at 26–30.

[30] Decarolis, Li, & Paternollo, *supra* note 18.

shares (relative to a choice screen) is larger when a firm faces tougher competition.[31] For example, in the EU, where Google's strongest rival (Bing) was extremely weak, with a market share of only about 1%, the elimination of Google's default reduced its market share by less than 1%.[32] By contrast, in Russia, where Google's strongest competitor (Yandex) had a market share of over 30% even before the choice screen mandate, elimination of Google's default reduced its market share by over 10%.[33] This result—that a default affects market shares more strongly when the default search engine faces tougher competition—is also predicted by economic theory under a very mild assumption.[34]

In another study, Allcott, et al., perform a field experiment involving users on desktop PCs.[35] The experiment subjects participants to a range of treatments, including changes in their default settings, and studies their subsequent behavior. In line with findings discussed above, they find that a choice screen barely increases Bing's market share, but that making Bing the default would raise its market share appreciably. It is noteworthy that the authors found this effect in a study involving desktop search defaults, given that the switching costs created by defaults are known to be significantly smaller on desktop than on mobile.[36]

According to evidence introduced at trial, Google's own researchers estimated that, if Google lost its defaults, it would lose substantial query volume, particularly on mobile devices.[37] Its research also found that "seemingly small friction points in user experiences can have a dramatically disproportionate effect on whether people drop or stick."[38] The stickiness of the defaults is also reflected in some usage statistics discussed by the *Google* court. Google's overall market share across all devices is about 90%.[39] That is 10% higher than Google's share of search queries on Windows desktop machines, on which the Edge browser (which defaults to Bing) is the default browser.[40] Most of Google's queries on Windows desktops stem from users

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[31] *Id.*

[32] *Id.* at 11

[33] *Id.*

[34] The necessary assumption is that some users will stick with the default search engine. *See* Hovenkamp, *supra* note 3, at 24–26.

[35] Allcott et al., *supra* note 4.

[36] *See Google*, 747 F. Supp. 3d at 28–30 (discussing evidence to this effect).

[37] *Id.* at 29–30.

[38] *Id.*

[39] *Id.* at 1.

[40] This figure does not take into account Microsoft's mobile devices that do not use the Windows operating system, and it is generally understood that switching defaults is more difficult with mobile devices. *Id.* at 32, ¶82 and 28, ¶71.

who downloaded the Chrome browser, which defaults to Google.[41] Among users of Microsoft's Edge browser, Google query share falls to just 20%.[42]

Finally, while large payments are not inherently problematic, Google's immense payments for defaults provide powerful circumstantial evidence for the stickiness of defaults. It is unlikely that Google would pay tens of billions of dollars annually for defaults if they do not have significant effects on consumer choice. Google conceded this point during the litigation.[43]

4. *Google's Contracts*

Google has entered into contracts for defaults with partners in three categories: browsers; Android device makers ("OEMs," or original equipment manufacturers); and cellular service carriers.[44] Google's total payments to these partners are substantial, totaling more than $26 billion in 2021 alone.[45]

Google has default contracts with all major browsers other than Microsoft Edge. The most significant by far is its Safari default agreement.[46] In addition, Google has acquired defaults on the Firefox and Opera browsers, among others,[47] and gives itself the default placement on its own Chrome browser. As a result, Microsoft Edge is the only significant browser that does not default to Google.

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[41] *Id.*

[42] *Id.* at 33. On this point, we agree with the court that while some of this may be explained by "Microsoft-brand loyalists," that possibility is unlikely to explain why Google's query share is so much lower on Edge.

[43] *Id.* at 227 ("Google acknowledges that a search engine in the default position receives additional search volume beyond what it would otherwise receive.")

[44] *Id.* at 101–34.

[45] *Id.* at 3.

[46] Google and Apple entered into an Internet Service Agreement (ISA) in 2016, and that agreement has been extended until 2026. The ISA requires Apple to make Google the default search engine on Safari on all Apple devices. In exchange, Google pays Apple a percentage of its advertising revenues on Safari and Chrome browsers on Apple devices. Google's revenue share payments to Apple in 2022 were estimated to total $20 billion. This reflected a 36% revenue share. The payments comprised approximately 17.5 percent of Apple's total profits for the year. *See, e.g.*, Paresh Dave, *Would You Still Use Google if It Didn't Pay Apple $20 Billion to Get on Your iPhone?*, WIRED (May 2, 2024), https://www.wired.com/story/google-pay-apple-20-billion-to-get-on-your-iphone/.

[47] Mozilla switched changed the Firefox default search engine from Google to Yahoo in 2014. Yahoo had difficulty meeting the minimum payment guarantee in their agreement, and Mozilla switched back to Google in 2018. *Google,* 747 F. Supp. 3d at 116.

Google has also entered into Mobile Application Distribution Agreements (MADAs) with all manufacturers of Android devices. Under the MADAs, OEMs that wish to install any of Google's proprietary mobile applications (including the Google Play store) on their devices must agree to preload 11 specified applications, including the Chrome browser and a Google Search Widget.[48] Google also enters into revenue share agreements (RSAs) with Android OEMs.[49] In these deals, Google pays OEMs a revenue share in exchange for the OEM agreeing to take other steps to promote Google's status as the default browser. These RSAs, which apply to Android devices sold directly to consumers, reinforce and strengthen the preinstallation and default requirements imposed under the MADA contracts.[50] Google also enters into similar RSAs with all major cellular carriers.[51]

Google's contracts expressly or effectively require exclusivity. Its browser agreements require Google Search to be the default on all versions of the relevant browsers. Its MADA contracts do not expressly prohibit OEMs from preinstalling additional search access points that do not default to Google, but they have that effect because OEMs recognize that preloading more than one browser degrades the user experience and increases costs.[52] Additionally, all of Google's Android RSAs include an "alternative search services" clause that "limits the partner's ability to preinstall or promote a different [search engine]."[53] For all practical purposes, therefore, these contracts require Google's partners to ensure that Google Search the default search engine for all of their users. [54]

Roughly 50 percent of all general search queries in the United States flow through access points covered by the contracts described above. An additional 20 percent of such queries flow through Chrome browsers that users have downloaded manually.[55]

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[48] *Id.* at 118–19.
[49] *Id.* at 128.
[50] *Id.* at 129–30.
[51] *Id.* at 123.
[52] *Id.* at 121–22.
[53] *Id.* at 129.
[54] *Id.* at 101.
[55] *Id.* at 25, ¶¶62, 63.

II. ECONOMIC ANALYSIS

A. DEFAULTS BY A DOMINANT SEARCH ENGINE

1. *Static Effects*

a. Effect on Demand and Market Power

The biasing effect of defaults manifests as opposing shifts in the firms' residual (firm-level) demand curves: the default diverts a portion of consumers from non-default search engines to the default search engine, increasing demand for the default search engine and reducing demand for competitors.[56] It is these demand shifts that catalyze the default's short-run effects on competition and consumers.[57] They imply that the dominant firm's market power increases, while rivals get weaker.

For the dominant firm's defaults to have these adverse effects, the demand shifts must be material in magnitude. The magnitude of the shifts depends primarily on three things.[58] The first is the strength of the relevant biasing effects, such as switching costs. The second is the strength of data-driven scale effects. The third is the breadth of a search engine's defaults—the share of the market they cover.

The breadth of the dominant firm's defaults is a critical factor in determining their potential to undermine competition. This is analogous to how the potential harm of tying or exclusive dealing agreements is linked to the share of the market from which rivals are foreclosed. If Google's defaults were not very broad, they would not significantly weaken rivals and would not appreciably increase Google's market power.

b. The Role of Scale Effects

For most people, it is not hard to go into a browser's settings menu and change the default search engine. But because of scale effects, defaults can have an important impact on competition even if they divert only a small portion of search queries.[59] This is due to a kind of "feedback loop" that arises in many digital markets where user data is employed to enhance a product's

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[56] *See* Hovenkamp, *supra* note 3, at 9.

[57] In the long run, the downward shift in demand for rival search engines could imperil small rivals or entrants. A hallmark of two-sided platforms is that they must attain a critical mass of users in order to achieve sustained success. *See, e.g.*, David S. Evans, *The Antitrust Economics of Multi-Sided Platform Markets*, 20 YALE J. REG. 325 (2003).

[58] *See* Hovenkamp, *supra* note 3.

[59] *Id.* at 13.

performance.[60] It operates as follows. When Google's defaults are first implemented, they divert some consumers from rivals to Google. As a result, they also divert some consumer data from rivals to Google. Due to scale effects, this raises Google's quality and lowers rivals' quality. These quality changes then lead even more users to switch to Google, which in turn leads to more quality changes, and so on.

The result is that a broad default might have a significant effect on market shares—and on Google's market power—even if switching costs and other behavioral effects are relatively small. As explained below, scale effects will also play an important role in the dynamic effects of Google's defaults.[61]

c. Effects on Static Consumer Welfare

To see how Google's defaults affect consumers in the short run, it is helpful to look at how they affect individual users of different search engines. These user-level welfare effects are plotted in Figure 1, which comprises three graphs corresponding to three possible scenarios. These welfare effects are obtained from a formal economic model of search defaults and competition.[62]

In each graph, the solid line (S_{google}) is the average consumer surplus of a Google Search user in equilibrium, while the dashed line (S_{rival}) is the average consumer surplus of a rival search engine user in equilibrium. Because there are many more Google users than rival search users, a default's impact on *aggregate* consumer surplus (the combined surpluses of all users) is influenced much more by its effects on Google users than by its effects on users of rival search engines.

Each graph shows how user surplus levels (the y-axis variable) change as switching costs (the x-axis variable) increase in magnitude.[63] When the switching cost is zero, defaults have no effects. But as the switching cost increases, the defaults start to affect user surplus. The more rapidly user surplus falls, the more harmful defaults are to the users of the affected search

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[60] *See, e.g.*, Andrei Hagiu & Julian Wright, *Data-Enabled Learning, Network Effects, and Competitive Advantage,* 54 RAND J. Econ 633 (2023); AJAY AGRAWAL, JOSHUA S. GANS, & AVI GOLDFARB, PREDICTION MACHINES, UPDATED AND EXPANDED: THE SIMPLE ECONOMICS OF ARTIFICIAL INTELLIGENCE (2022); Gans, *supra* note 6.

[61] *See infra* Section II.A.2.

[62] These effects stem from the linear version of the model in Hovenkamp, *supra* note 3.

[63] Average consumer surplus is higher for Google users (and hence S_{google} lies above S_{rival}) because Google is of higher quality. This is true even absent scale effects; but scale effects magnify Google's quality advantage, because more users pick Google and hence Google gets more data.

engine. By inspection, in all three graphs, defaults are more harmful to rival search users than to Google users. In the first graph, the disparity is small, but it gets larger in each subsequent graph.

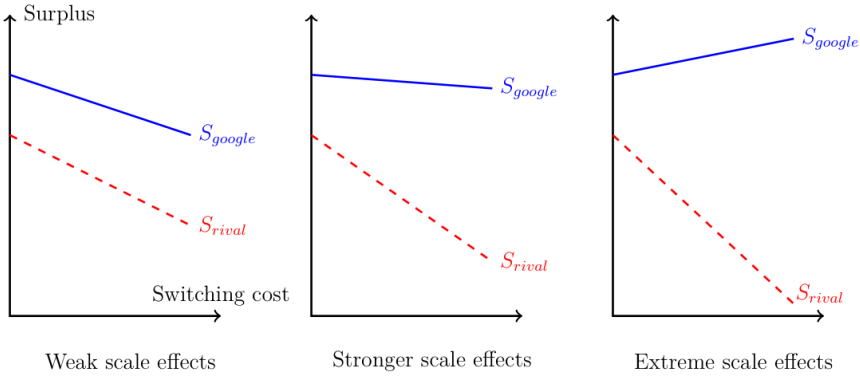


FIGURE 1: THE SOLID LINE (S_{google}) GIVES THE AVERAGE CONSUMER SURPLUS OF A GOOGLE USER, WHILE THE DASHED LINE (S_{rival}) GIVES THAT OF A RIVAL SEARCH USER. THE DIFFERENT GRAPHS CORRESPOND TO DIFFERENT STRENGTHS OF SCALE EFFECTS.

The three graphs correspond to different possible strengths of scale effects. In the first graph, scale effects are sufficiently weak to be ignored. We can see that Google's defaults have adverse effects on users of both search engines, although they are more harmful to rival search users. The defaults harm these users by introducing switching costs that make rival products harder to adopt. Although Google users are not directly affected by switching costs, they are nevertheless harmed by a reduction in competition. Specifically, because the default weakens its rivals, Google gains market power and is thus incentivized to behave less competitively.[64]

In the second graph, scale effects are strong and can no longer be neglected. All of the effects from the first graph are still present, but now they are accompanied by significant quality changes due to scale effects. By diverting users to Google, the default raises Google's quality and lowers rivals' quality. The increase in Google's quality mitigates the harm to Google users from diminished competition; hence, their surplus level is now falling much more slowly. By contrast, the default is now even more harmful to rival search users, since it reduces the quality of their preferred search engines.

Note that, in both the first and second graphs, Google's defaults necessarily reduce aggregate consumer welfare because they harm users of all search engines. However, in the scenario in the third graph, that is no

[64] *See supra* notes 56–**Error! Bookmark not defined.** and accompanying text.

longer true. Here, the quality changes wrought by scale effects are extremely large. This further exacerbates the harm to rival search users. But the more interesting feature of this scenario is that, on balance, the default now *increases* the welfare of an average Google user. This is because the default's beneficial impact on Google's quality is now so large that it outweighs the harmful effect of diminished competition.

In this case of extreme scale effects, the default could raise aggregate consumer welfare.[65] Although the benefits conferred to an individual Google user are smaller than the harm imposed on a rival search user, this can be offset by the fact that there are far more users on Google. This could in principle provide a procompetitive justification for Google's defaults. However, as we explain later, this scenario is very unlikely to be true, because scale effects are subject to diminishing returns (a complication that these graphs omit).[66] This implies that the quality benefits for Google are likely to be modest in relation to the adverse effects on rivals' quality.

2. *Dynamic Effects*

Google's broad defaults also have adverse effects on dynamic phenomena like market entry/exit or investments. The main reason for this is that they prevent most smaller rivals from obtaining any defaults (even relatively narrow ones) for themselves. This discourages entry and investment by smaller rivals and entrants, forestalling the emergence of serious competitive threats to Google.[67] These points overlap substantially with an argument we return to later—namely, that permitting smaller rivals to obtain (limited) default privileges is crucially important to dynamic competition.[68]

There have been very few attempts to enter the general search market in the last 15–20 years.[69] Bing launched in 2009. DuckDuckGo was created a year earlier,[70] but now syndicates search results from Microsoft rather than producing its own results.[71] A more recent entrant was Neeva, which launched in 2019.[72] It was unable to secure any default placements, failed to gain enough users, and dissolved after a few years.

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[65] *See* Hovenkamp, *supra* note 3, at 15.

[66] *See infra* Section III.B.1.

[67] *See* Hovenkamp, *supra* note 3, at 21–23.

[68] *See infra* Section II.B.1.

[69] Later we discuss the very recent emergence of some AI search tools, such as ChatGPT Search. *See infra* Section III.A.4.

[70] *See Google*, 747 F. Supp. 3d at 10–11.

[71] Yahoo, an early leader in search, now does the same. *Id.* at 11.

[72] *Id.*

As Neeva's story illustrates, a search engine cannot succeed without obtaining a critical mass of users,[73] in part because of scale effects. To be competitively viable, a new search engine will need to be of sufficiently high quality relative to existing alternatives. This requires not just skilled engineers, but also a sufficient volume of users to generate enough data to train its algorithms.

More generally, two-sided platforms often must rely on some kind of contractual restraint to obtain the critical mass of users they need to become serious competitors.[74] To compete with larger incumbents, small platforms thus often obtain exclusive rights over popular products or digital content. Economic research shows that such exclusivity can play an essential role in fostering entry and maintaining competition over the long run.[75]

For example, suppose an entrant video game console gets exclusive rights over a popular video game. As with search defaults, this nudges some consumers to adopt a less popular console. In the short run, that's painful for consumers who prefer the dominant console. But without this nudge, all consumers would likely pick the dominant console, and no competition would develop in the long run, leading to higher prices and less innovation.[76]

Search defaults perform a similar dynamic function. Because defaults are by far the most effective mode of search distribution, it would be extremely difficult for a modern entrant to succeed without obtaining some default privileges.[77] But Google's broad defaults make that largely impossible. With the exception of Microsoft Edge, which defaults to Bing, all browsers with a meaningful user count have conferred exclusive default status to Google.

Google's search defaults discourage entry by making it difficult or impossible for new entrants to obtain any default share. By contrast, if a potential entrant anticipated that it could acquire a default upon entering the

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[73] *See Google*747 F. Supp. 3d at 226 ("Scale is the essential raw material for building, improving, and sustaining a [general search engine]".)

[74] *See, e.g.*, David S. Evans, *Vertical Restraints in a Digital World*, *in* The Evolution of Antitrust in the Digital Era: Essays on Competition Policy (David S. Evans, Allan Fels, & Catherine Tucker, eds., 2020).

[75] *See, e.g.*, Robin S. Lee, *Vertical Integration and Exclusivity in Platform and Two-Sided Markets*, 103 AM. ECON. REV. 2960 (2013).

[76] *Id.*; *see also*, *e.g.,* Erik Hovenkamp, *Restraints on Platform Differentiation*, 25 YALE J.L. & TECH. 271 (2023).

[77] It is likely not a coincidence that Google's most successful American competitor, Bing, came from a company (Microsoft) that already operated a successful browser (Internet Explorer, now Edge). This allowed Microsoft to give Bing a valuable default placement right out of the gates.

market, it would have a greater incentive to enter.[78] The default would help the firm to obtain the critical mass of users—and user data—that it will need to be a viable competitor, increasing its chances of being successful.

Google's default agreements also discourage existing rivals from investing in their own quality. The agreements diminish the benefits a rival would obtain by increasing its quality, because they ensure that Google will retain the initial default status even if the rivals improve in quality.[79]

By contrast, suppose that Google's defaults were limited in scope, so that significant default placements remained available to smaller rivals. Small rivals seeking those defaults would bid against each other, not against Google. In this world, each rival would anticipate that it could realistically obtain some default privileges and would have a greater incentive to invest in its quality. Because higher quality begets more users (and thus more advertising revenue), the firm would be able to make more competitive bids for default placements.[80] By contrast, if rivals know that they have no shot at winning the default because Google will outbid them at every turn, this incentive to invest in quality is absent.

At present, Google's rivals are not able as a practical matter to outbid Google for default placements. There are several reasons for this.[81] First, given its immense resources, Google is likely to have a greater ability to pay than a small rival or entrant. This is exacerbated by the fact that venture capital has shown little interest in funding new search engines.[82]

Second, to outbid Google for a browser's default, an entrant would have to offer a much larger revenue share than Google offers.[83] But Google generates much more ad revenue than rival search engines. This is because (1) Google Search attracts far more users and thus generates far more ad impressions than rivals, and (2) Google charges higher prices to advertisers and thereby generates more revenue per impression on average.[84] Note that,

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[78] *See* Hovenkamp, *supra* note 3, at 21–23.

[79] *See id.* at 21–23.

[80] If a firm earns more ad revenue, then a given revenue share is worth more in nominal terms. This makes it easier for the firm to outbid rivals while still keeping enough revenue to earn a profit.

[81] *See* also *Google*, 747 F. Supp. 3d at 233 (discussing these difficulties).

[82] *See id.* at 23 (noting that "venture capitalists and other investors have stayed away from funding new search ventures").

[83] This is because Google is likely to generate much more total revenue, due to its greater popularity and more lucrative ad services. As a result, a small share of Google's revenue could be worth a lot more than a large share of an entrant's revenue. *See also id.* at 232–33.

[84] Hovenkamp, *supra* note 3, at 12–13.

as the data discussed above about search engine use by users of Microsoft devices illustrates,[85] point (1) would very likely be true in the short run even if a rival obtained a particular default. While the default would increase the rival's user share on the affected browser, most users of that browser would switch to Google, at least in the short run, given that Google is presently the most popular search engine.

Third, Google very likely has a higher willingness to pay for defaults than a smaller rival.[86] This is not because the user data generated by the default is more helpful to Google—it almost certainly isn't.[87] Rather it is because preserving monopoly usually provides greater total profits than invigorating competition.[88] A corollary is that a dominant firm usually has a larger interest in protecting its monopoly than a smaller rival has in disrupting it.[89]

3. *Possible Procompetitive Effects*

Defaults by a dominant firm could potentially have a number of procompetitive effects, such as improving Google's quality through scale effects; promoting competition in the browser market; and potentially reducing prices of mobile devices. However, because our analysis of these and other possible procompetitive effects will hinge on both economic and legal considerations, we defer our discussion of efficiencies to Section III.[90]

B. DEFAULTS BY SMALLER RIVALS AND ENTRANTS

Google's payment offers have made it largely impossible for rival search engines to acquire any default share.[91] To assess the significance of that fact,

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[85] *Supra* Section I.B.3.

[86] *See* Hovenkamp, *supra* note 3, at 13–14.

[87] *See infra* Section II.A.3.i (discussing diminishing returns to user data).

[88] This is very likely true in the search market, both because of scale effects and because the market is not very differentiated. *See* Hovenkamp, *supra* note 3, at 26–27.

[89] Richard J. Gilbert & David M. G. Newbery, *Preemptive Patenting and the Persistence of Monopoly*, 72 AM. ECON. REV. 514 (1982). The reasons for this are straightforward. If a rival wins a default, its profits would increase, while Google's would decline. However, because a default that aided the rival would make the market more competitive, it would reduce *total* profits of all firms in the market. It follows that the increase in the rival's profit would be less than the decline in Google's profit. Thus, Google is willing to pay more for the default position to protect its profits than the rival would be willing to pay to increase its profits. *See* Hovenkamp, *supra* note 3, at 13–14.

[90] The legal and economic effects of these benefits is discussed *infra* Section III.B.

[91] Bing is an exception; it is the default on Microsoft Edge. But most search owners of engines do not also own a browser.

we now consider how defaults favoring smaller rivals would affect competition and consumer welfare. Most of this analysis assumes that the defaults obtained by small rivals would be relatively narrow in scope.

1. *Static Effects*

As explained above, when a default favors the dominant firm, it generally has an adverse effect short-run competition and consumer welfare.[92] By contrast, when the default instead favors a smaller rival, its static effects are, in general, more uncertain.

A default favoring a laggard competitor could be worse for static consumer welfare than an equivalent default favoring Google because most consumers today prefer Google. As a result, when Google obtains the default, most affected consumers are nudged toward the same search engine they would have picked anyway. By contrast, when the laggard obtains the default, most consumers are nudged toward an option that is not their first choice. All else being equal, the latter situation will tend to generate greater misallocation—it will lead more users to adopt a less-preferred option.[93]

This possibility was predicted in a recent study by Allcott et al., which employs a combination of theory and empirics to study the static effects of search defaults.[94] They find that defaults are generally worse for consumers than an active choice system (such as a choice screen). But they also find that defaults favoring smaller rivals are significantly worse for static consumer welfare than those favoring Google.

This is certainly possible. However, the argument is sensitive to modeling assumptions. Under plausible alternative conditions, it is possible that a laggard's default could have a net-positive effect on static consumer welfare.[95] Consider two illustrations of this.

First, if the laggard is sufficiently small, its default can raise static consumer welfare when data-driven scale effects are significant but, as studies discussed below suggest,[96] are subject to diminishing returns. In that case, the marginal value of data is high for the laggard but low for Google. Thus, the laggard's default will increase its own quality substantially, while reducing Google's quality only slightly. This tradeoff could increase static consumer

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[92] *See infra* Part II.A.1.

[93] *See* Hovenkamp, *supra* note 3, at 15–16.

[94] *See* Allcott et al., *supra* note 4.

[95] These benefits are distinct from the more substantial dynamic benefits considered *infra* Part II.B.2.

[96] *See infra* Section III.B.1 (discussing dynamic effects).

welfare overall.[97] This is most likely to be true if the laggard's default is relatively narrow.[98]

Second, even without diminishing returns, a narrow default involving a small competitor can potentially raise static consumer welfare by generating broad benefits and narrow harms.[99] By diverting some demand from Google to the laggard, the default reduces Google's market power. This induces Google to behave more competitively, for example, by reducing unwanted ads or improving the consumer experience in other ways. Because Google has such a large market share, this benefits a very large number of consumers. However, because the laggard's default is narrow, the most harmful static effects of its default are confined to a relatively small portion of users. The former benefits could outweigh the latter harms, increasing static consumer welfare on balance.

2. *Dynamic Effects*

Allowing smaller rivals to obtain some default distribution is important for dynamic competition. This point overlaps substantially with our earlier analysis of dynamic effects.[100] Google's broad defaults harm dynamic competition by foreclosing rivals from the default distribution channel, which chills entry and investment. The flipside of that conclusion is that allowing smaller rivals and entrants to obtain some default distribution would increase entry and investment by laggard competitors.

3. *Broad Defaults by a Small Rival?*

If a laggard were somehow able to acquire very broad defaults and maintain them for an extended period of time, this would likely be detrimental to competition and consumer welfare, both in the short run and the long run. First, the likelihood that a laggard's default would increase static consumer welfare becomes either implausible or impossible if the laggard's defaults cover a large share of the market and thus divert a large number of users away from their preferred search engine. Second, broad defaults by any firm—even a laggard—would tend to generate the same kind of adverse dynamic effects as Google's defaults. In particular, they would make it more difficult or

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[97] *See* Hovenkamp, *supra* note 3.

[98] A narrower default diverts a smaller amount of data, which helps to ensure that the marginal quality benefits to the laggard will be much bigger than the marginal quality loss inflicted on Google.

[99] *See* Hovenkamp, *supra* note 3, at 16–21.

[100] *See supra* Section II.A.2.

maybe impossible for other firms to obtain defaults, thereby impairing incentives for entry and investment by rivals.

Thus, one simple message of our analysis is that it is undesirable to let any individual firm—big or small—acquire defaults covering a large share of the search market. In the long run, competition is most likely to thrive when all firms can use defaults only in moderation.[101]

C. Counterfactuals and But-For Worlds

As an economic matter, the competitive effects of a defendant's conduct must be measured relative to a counterfactual—a hypothetical world in which the defendant does not engage in that conduct. Precise determination of what would have happened in the search market absent Google's default agreements is impossible. In the preceding analysis, we implicitly evaluated defaults (both by Google and by smaller rivals) relative to a neutral benchmark in which no search engine was a default on any browser or device, Although we do not believe this scenario is likely, it is a convenient benchmark, as it involves no defaults and therefore no biasing effects.

We now analyze a set of plausible counterfactuals in some detail. We will not attempt to identify which one represents the true "but-for world." Rather, we demonstrate that Google's contracts are likely to be anticompetitive relative to *any* of these counterfactuals. Our discussion will focus on Google's default contracts with browsers. The same analysis can be extended to Google's Android agreements.

1. *Counterfactuals Involving No Contractual Payments by Google*

a. Default Placements Sold to Rivals

One possibility is that, if Google did not acquire such broad defaults, some or all of its existing default placements would have been sold to smaller rivals instead. Google's conduct is very likely anticompetitive relative to this counterfactual. As we have argued in detail, allowing rivals to obtain some

[101] Notice that this is essentially the same policy antitrust maintains toward vertical restraints like tying and exclusive dealing, which are often procompetitive when used in moderation. *See, e.g.*, ZF Meritor, LLC v. Eaton Corp., 696 F.3d 254, 270 (3d Cir. 2012)(explaining that exclusive dealing agreements are often entered into for entirely procompetitive reasons); Tampa Elec. Co. v. Nashville Coal Co., 365 U.S. 320, 328 (1961) (holding that exclusive dealing does not violate the antitrust laws unless it restrains a "substantial share of the relevant market"); Eastman Kodak Co. v. Image Tech. Servs., Inc., 504 U.S. 451, 488–89 (1992) (explaining that "bundling arrangements not coerced by the heavy hand of market power can serve the procompetitive functions of facilitating new entry into certain markets).

default privileges is crucially important to long-run competition.[102] Thus, while these laggard defaults might be harmful in a purely static sense, they are likely to benefit consumers in the long run by providing the necessary conditions for energetic competition and innovation.

The one potential exception is a counterfactual world in which a single rival (say, Bing) acquires a very broad default share, comparable to that presently maintained by Google. As we explained above, broad defaults by a small rival would likely raise the same kinds of static and dynamic harms as Google's broad defaults.[103] As a result, this hypothetical arrangement would itself warrant antitrust scrutiny, making it an inappropriate counterfactual for antitrust purposes.

b. Unpaid Defaults or Choice Screens

Two other possible counterfactuals involve no payments by Google. The browser could offer a choice screen, or it could *unilaterally* make Google the default, despite not being paid to do so. To our knowledge, nothing in the record suggests that the latter would have happened, but we nevertheless include it for completeness.

We consider these two possibilities together because, compared to these alternatives, Google's search engine defaults would have little, short-run effect on Google's dominant position in search. If Google retained its default for free, it would not lose any market share in the short run, and a choice screen would likely reduce Google's market share by just a few percentage points in the short run.[104]

It is therefore possible that the static harms from Google's default agreements would be rather small compared to this counterfactual at the margin.[105] But those agreements would still generate the dynamic harms discussed above. New entrants are less likely to be deterred, and existing rivals are more likely to invest in quality improvement in the absence of the default agreements because the *prospect* of being able to acquire defaults in the future (after introducing a more competitive search engine) would

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[102] *Supra* Section II.B.

[103] *Supra* Section II.B.3.

[104] This is consistent with the results of a recent European regulatory mandate requiring a choice screen on Android devices. The choice screen has reduced Google's market share in Europe by only about 1%. Decarolis et al., *supra* note 18.

[105] The "at the margin" qualifier is necessary because, if Google did not already have a substantial quality advantage over rivals, the static effects of its defaults would be larger. *See* Hovenkamp, *supra* note 3, at 24–26.

incentivize entry and investment by rivals.[106] These dynamic effects might be one of the reasons that Google conditioned its huge revenue share payments on default status.

2. *Counterfactuals Involving Alternative Contracts*

a. Unconditional Revenue Sharing

Another counterfactual possibility involves "unconditional" revenue sharing. Under this arrangement, a browser could receive payments from any or all search engines as long as the payments are not conditioned on default privileges. The unconditional payments would presumably be intended, at least in part, to discourage the browser from giving or selling default status to a rival and to encourage it to make the participating search engine the default instead of implementing a choice screen.

The district court opinion in *Google* does not discuss unconditional revenue sharing. It is, however, a possible counterfactual, and it might in principle generate results similar to Google's default contracts. Google would likely be willing and able to offer significantly larger unconditional payments than any of its search rivals, for reasons discussed above.[107] At least in the short run, the browsers would maximize their total payment receipts by steering users to the highest-paying search engine, and we would end up in essentially the same place we are now. One might therefore argue that, if the but-for world would have involved unconditional revenue sharing, then Google's default contracts did not actually cause significant harm.

There are, however, several problems with this argument. First, the argument understates the differences between unconditional revenue sharing and default agreements. Unconditional payments might not deter browsers from taking payments to make another search engine the default for a portion of the browser's users. Browsers might want to facilitate improvement in the quality of a rival search engine by making it the default for at least some users to increase search engine competition which would benefit the browsers in a number of ways. By facilitating greater competition in search, this could benefit the browser in the long run.[108] And browsers might benefit in the short

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[106] *See supra* Section II.B.1.

[107] *See supra* Section II.A.2.

[108] Increased search competition would tend to lead to larger total revenue sharing payments because increased competition among buyers generally raises the prices they offer to sellers. It could also lead to higher quality in the search market, which benefits the browsers, since search engines are a complementary good.

run if they attract additional users by offering differentiated versions of the browser with different default settings.

Evidence in the record of the *Google* case tends to support this skepticism that unconditional revenue payments would have substantially the same effects as default agreements. The evidence shows that most of Google's partners (including Apple) have at times sought to work with competing search firms on a limited basis (despite recognizing that this would reduce the payments they receive).[109] But the court found that Google either refused to offer any revenue share or offered much less revenue share absent the browser's commitment to exclusive default status, presumably because it believed that having that status increases its share of search queries.[110]

Google seemed to corroborate this inference at the trial. Its expert, University of Chicago economics professor Kevin Murphy, testified that unconditional revenue sharing "is really at odds with basic economics, particularly for a firm like Google."[111] He explained that "the rev share payment is to get performance, get them to do something, give me a bookmark, put me in a default."[112] Similarly, in discussing unconditional revenue sharing during closing arguments, one of Google's attorneys said that "[a]bsolutely nobody would enter into that deal," and emphasized that unconditional payments were unprecedented in the industry.[113]

Third, if unconditional revenue sharing does have effects that are largely the same as those of Google's default agreements, it might be illegal, particularly if the payments cover a large share of queries in the search market.[114] We discuss this possibility below.[115] If it were illegal, it would not be a relevant counterfactual for antitrust purposes. The fact that an unlawful alternative might be almost as harmful for competition as the default

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[109] *Google*, 747 F. Supp. 3d at 110–12, 125–27, 132.

[110] *Id.* As a result, if a browser were to work with rivals even on a very limited basis, it would give up most or all of the revenue being offered by Google for exclusive default status. By contrast, under unconditional revenue sharing, a browser that makes a rival the default for a small percentage of its users would lose only a small percentage of the revenue offered by Google.

[111] Transcript of Bench Trial Proceedings at 9681, 9791–92 United States v. Google LLC, No. 20-3010 (D.D.C. Nov. 13, 2023) (testimony of Kevin M. Murphy).

[112] *Id.*

[113] Trial Transcript 210:6–18, United States v. Google LLC, No. 20-3010 (D.D.C. May 3, 2024) (closing argument of John E. Schmidtlein).

[114] *See* Steven Salop, *Unconditional Revenue Sharing by Google Would Still Be Anticompetitive*, PROMARKET (Dec. 23, 2024). We discuss below the major similarities and difference between default agreements and unconditional revenue sharing. *See infra* text at notes 194–95.

[115] *See infra* Section IV.B.2.

agreements provides no basis for concluding that the default agreements themselves are lawful.

b. Non-exclusive Defaults

The court referred to what it called "non-exclusive" defaults, which it regarded as preferable to "exclusionary . . . search default[s]."[116] By "non-exclusive" defaults, the court presumably meant agreements that make Google the default for some, but not all, of a browser's users. One can imagine various agreements of that type.

One can imagine, for example, an agreement pursuant to which a browser provider offers two browsers, one with a Google default and the other with no default or another search engine as the default.[117] Alternatively, a browser might enter into an agreement pursuant to which Google is the default on one type of device or browser (e.g., mobile) but not on other types (e.g., desktop). Or an OEM might agree to make Google the default on some mobile device models but not others. A browser or OEM might agree to randomize its default settings across users according to some predetermined percentages.[118]

These kinds of "non-exclusive" default agreements would obviously be less likely to harm competition than exclusive defaults. They would permit rivals to bid on default status for a portion of the browser's users without facing insurmountably high counterbids from Google.

Of course, if a "non-exclusive" agreement promised to make Google the default for, say, 95% of users, then it would be almost indistinguishable from an exclusive default contract. The legality of Google's default agreements, whether exclusive or non-exclusive, is likely to depend in part on, the breadth of default status they create for Google.

III. ANTITRUST ANALYSIS

As noted above, this article is intended to analyze the economic and legal implications of search engine default agreements. Our purpose is, not to assess how the courts should decide the pending *Google* case, but rather to

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[116] *Google*, 747 F. Supp. 3d at 249 (quoting plaintiffs' proposed findings of fact).

[117] The arrangement would be similar to a choice screen, in which the choice is made when the user selects the browser or device, instead of after making that selection.

[118] Firefox did this briefly. As an experiment, it made Bing the default for a small fraction of users. *Google*, 747 F. Supp. 3d at 117.

explore the difficult and important economic and legal issues raised by agreements of the type at issue.

To help frame the discussion, we have assumed certain facts and conclusions that the court found in that case. These include the Court's findings that Google has monopoly power in what the Court called the general search services market and that that monopoly was lawfully obtained.

Given those assumptions, the antitrust issue raised by the default agreements is whether they constituted an unlawful means of maintaining Google's monopoly in violation of Section 2 of the Sherman Act. The applicable legal standard for determining liability was described by the Court of Appeals in the *Microsoft* case as follows:[119]

- First, the plaintiff must demonstrate that the conduct at issue—here, Google's default agreements—has "an 'an anticompetitive effect.' That is, it must harm the competitive process and thereby harm consumers. In contrast, harm to one or more competitors will not suffice."

- Second, if the plaintiff demonstrates an anticompetitive effect, the defendant "may proffer a 'procompetitive justification' for its conduct."

- Third, if the claimed justification is not rebutted, the plaintiff "must demonstrate that the anticompetitive harm of the conduct outweighs the procompetitive benefit."[120]

The discussion below tracks that framework.

A. Proving Anticompetitive Effects

Harm to the competitive process means a material reduction in the competitive constraints imposed by rivals. Harm to "one or more competitors" that does not have a material impact on those constraints will not suffice. A reduction in the competitive constraints imposed by rivals increases the monopolist's market power. An anticompetitive effect is

[119] United States v. Microsoft Corp., 253 F.3d 34, 58–59 (D.C. Cir. 2001) (en banc) (per curiam).

[120] *Microsoft* did not include "less restrictive alternatives" in its outline of the rule of reason, although courts do so today. *See, e.g.*, NCAA v. Alston, 594 U.S. 69, 101 (2022). Because Google did not demonstrate any procompetitive justification, we will devote little consideration to less restrictive alternatives. *See also Google*, 747 F. Supp. 3d at 258, n. 15 ("Google has failed to prove . . . procompetitive benefits").

therefore an increase in the defendant's market power compared to the world absent the conduct at issue.[121]

1. *Harm to Competition*

Google's default agreements plainly harmed its actual and potential competitors. They diverted search queries, data, and revenue from rival search engines to Google. These effects were magnified by scale effects. By diverting data from rivals, they impaired rivals' ability to improve their search quality. Because there are diminishing returns to data, the adverse effect on rivals' quality was greater than the resulting increase in Google's quality. In addition to these static effects, Google's broad defaults had harmful dynamic effects by making it impossible for most rivals to obtain default placements of their own. This undermined its rivals' incentives for entry and investment.[122]

Google's default agreements could be found to violate Section 2 only if they harmed the relevant search services market as whole by diminishing or being sufficiently likely to diminish the competitive constraint on Google provided by actual and potential competitors. The District Court did not explicitly find that, absent the default agreements, the market structure would have been materially different or there would have been new entrants into the search market. But the court did find that the default agreements had adverse effects on competition: they foreclosed rivals from the most attractive means of distribution[123] and thereby diminished rivals' share of search queries and data needed for quality improvement[124] and decreased incentives for investment in and innovation by Google's rivals and potential entrants.[125]

The legal question is whether these findings are sufficient to meet the threshold harm to competition element of the monopolization offense. In concluding that the harm was sufficient, the District Court repeatedly characterized the default agreements as "exclusive dealing" agreements. It used the share of search traffic on access points subject to the defaults as a measure of foreclosure, similar to how foreclosure shares are calculated in traditional exclusive dealing cases.[126]

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[121] *See, e.g.*, United States v. Grinnell Corp., 384 U.S. 563, 570–71 (1966) (defining the monopolization as "the willful acquisition or maintenance of [monopoly] power as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident").

[122] *See Google*, 747 F. Supp. 3d at 165-71.

[123] *Id.,* at 153-59.

[124] *Id.* at 159-65

[125] *Id.* at 165-71.

[126] *Id.* at 217.

The default agreements are like exclusive dealing agreements in important respects. Like exclusive dealing agreements, they interfere with the access of Google's competitors to important inputs, in this case, search access points. And, like exclusive dealing agreements, the competitive significance of that interference depends in part on the breadth of the restraints—in this case, the share of all search queries arising from access points on which Google is the default. It also depends upon the importance of the foreclosed inputs (default placements) to rivals.

The default agreements are less restrictive than some conventional exclusive dealing agreements in that they do not prevent rival search engines from being accessed, or even being made the default search engine, on the access points subject to the agreements. Thus, they do not completely eliminate competitors' access to the segments of the market affected by them; they just make it harder for rivals to reach those users.

This semantic issue is, however, ultimately unimportant. In finding the requisite harm to competition, the District Court relied heavily on the *Microsoft* decision, which held explicitly that the more formalistic rules that apply to exclusive dealing under Section 1 of the Sherman Act need not apply under Section 2, which is governed by the general principles summarized above.[127]

The District Court characterized *Microsoft* as embracing "the exclusive dealing framework." That framework, the Court said, requires consideration of "the degree to which the agreements foreclose the relevant market." But, because foreclosure is only a "screening function," the court must also "identify real world anticompetitive effects."[128] To that end, the Court found not only that rivals were substantially foreclosed from an important distribution channel but also that Google's agreements had other anticompetitive effects: they deprived rivals of scale, undermined their ability to improve the quality of their products, and reduced their incentives to invest and innovate.[129]

Section 2 liability requires not only that the defendant's conduct excluded rivals, but also that there is a causal nexus between the exclusionary conduct and the defendant's monopoly power. That nexus was not obvious in *Microsoft*.

In *Microsoft*, the defendant engaged a range of practices designed to exclude Navigator, a competing browser, and Java, an alternative

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[127] *Microsoft* at 70.
[128] *Google*, 747 F. Supp. 3d at 203.
[129] *Id.* at 226–48.

programming language. Neither of these firms was a competitor in the relevant operating system market; but, if they became widely used platforms, they had the potential to facilitate greater competition in that market in the future by making it easier for users of competing operating systems to gain access to software applications. Although the court did not find that there would have been more or stronger competitors in the operating system market but for Microsoft's conduct,[130] it held that the government had established a sufficient causal nexus between Microsoft's conduct and its dominance.[131] The court explained its decision as follows:

> We may infer causation when exclusionary conduct is aimed at producers of nascent competitive technologies as well as when it is aimed at producers of established substitutes. . . .
>
> . . . [T]he question in this case is not whether Java or Navigator would actually have developed into viable platform substitutes, but (1) whether as a general matter the exclusion of nascent threats is the type of conduct that is reasonably capable of contributing significantly to a defendant's continued monopoly power and (2) whether Java and Navigator reasonably constituted nascent threats at the time Microsoft engaged in the anticompetitive conduct at issue. . . . [I]t would be inimical to the purpose of the Sherman Act to allow monopolists free reign to squash nascent, albeit unproven, competitors at will—particularly in industries marked by rapid technological advance and frequent paradigm shifts. …[132]

In *Google*, the facts similarly suggested that Google's broad default agreements were reasonably capable of contributing to its dominant position in the search market. As in *Microsoft,* Google substantially foreclosed rivals from an important distribution channel, making it harder for rivals to enter and diminishing their incentive to invest and innovate. In fact, as we emphasize below, the causation argument requires less speculation in *Google* than it did in *Microsoft* because the excluded firms in *Google* included direct competitors in the relevant market.[133]

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[130] *Microsoft* at 106–07 (noting that "the District Court expressly did not adopt the position that Microsoft would have lost its position in the OS market but for *its* anticompetitive behavior").

[131] *Id.* at 79–80.

[132] *Id.* at 79.

[133] *See infra* notes [XXX–XXX ADD CROSS-REFERENCES] and accompanying text.

2. *Counterarguments and Objections*

a. Anticompetitive Effects and Causation

Judge Douglas Ginsburg and Koren Wong-Ervin make two related arguments.[134] First, they argue that the district court failed to find a sufficient "anticompetitive effect" in the *Google* case. By contrast, they argue that Microsoft's conduct had the "requisite competitive effect" because it foreclosed Navigator from market opportunities, contributed to a significant decline in its share of browser usage, and thus prevented it from gaining a critical mass of users necessary for it to become a platform that might facilitate new competition that could threaten Microsoft's monopoly.[135]

Second, they argue that the D.C. Circuit's subsequent decision in *Rambus v. Federal Trade Commission*[136] requires a plaintiff under Section 2 "to prove that, but for the defendant's alleged conduct, the defendant would not have acquired monopoly power or been able to exclude rival technologies."[137] Together, these commentators argue, these cases mean that Section 2 is violated only when a "competitive effect" like the harm to Navigator is proven and that it is not enough to prove only anticompetitive conduct that harms rivals and reduces the likelihood of increased competition.[138]

In our view, neither of these arguments is correct.

i. Anticompetitive Effect

Judge Ginsburg and Wong-Ervin overstate the effect actually found in *Microsoft* because they fail to take into account the fact that neither Navigator

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[134] Douglas H. Ginsburg & Karen W. Wong-Irvin, *FTC v. Rambus and the De Facto Causation Standard Under Sherman Section 2*, CPI COLUMNS (Nov. 18, 2024) [hereinafter Ginsburg & Wong-Irvin, *Causation*]; Douglas H. Ginsburg and Koren Wong-Ervin, *Challenging Consummated Mergers Under Section 2*, CPI (2020) [hereinafter Ginsburg & Wong-Irvin, *Challenging Mergers*].

[135] Ginsburg & Wong-Irvin, *Challenging Mergers*, *supra* note 134, at 3.

[136] 522 F.3d 456 (D.C. Cir. 2008).

[137] Ginsburg & Wong-Irvin, *Causation*, *supra* note 134.

[138] Ginsburg and Wong-Ervin also suggest that *Microsoft*'s "more lenient 'reasonably capable' standard" applies only to conduct that lacks any procompetitive justification. Ginsburg & Wong-Irvin, *Challenging Mergers*, *supra* note 134, at 4; *see also* Timothy J. Muris & Jonathan E. Nuechterlein, First Principles for Review of Long-Consummated Mergers, 5 CRITERION J. ON INNOVATION 29, 30 (2020). This suggestion is not supported by the *Microsoft* decision and is, in any event, irrelevant to the issues raised in the *Google* case because, as will be seen, neither the court's decision nor our analysis found any procompetitive justifications for Google's default agreements.

nor Java was a competitor in the relevant operating system market. The harm to Navigator in particular, which Ginsburg and Wong-Ervin characterize as having the "requisite competitive effect," took place in the separate browser market; and the court did not even find harm to competition in the browser market as a whole.[139] Nor did the court find that either Navigator or Java met the legal requirement to be a "potential entrant" into the operating system market.[140] Instead, the theory in the *Microsoft* case was that harm to Navigator in the browser market might reduce future competition in the relevant operating system market by reducing the likelihood that Navigator would eventually become a valuable platform complement to operating system competitors or, perhaps, develop both platform capability and operating system functionality and thereby become itself a competitor in the operating system market.[141] The government proved that Microsoft's conduct harmed Navigator in the browser market, but the rest of the theory about harm to competition in the operating system market was speculation.

The court thus had to address the question whether a speculative possibility that harm to a firm in another market might ultimately cause harm to competition in the relevant market was sufficient to meet the harm to competition element of Section 2. That was what the court called the "causation" question.[142] The Ginsburg and Wong-Ervin argument is based on a distinction between "competitive effects" and "causation." They caution that it is important not to conflate "the *Microsoft* court's standard for proving competitive effects with its standard for establishing causation."[143] But the court in *Microsoft* did not find harm to competition in the relevant market until it answered what it called the "causation" question. Until then, it found only harm to one major competitor in a different product market; and, the court stated explicitly that the requisite "anticompetitive effect" means "harm to the competitive process" – presumably in the relevant market – and that "harm to one or more competitors will not suffice."[144] If the harm to Navigator

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[139] The government alleged two kinds of harm in the browser market, but the court rejected both of them because, among other things, the district court had not even defined or analyzed a browser market. *See Microsoft*, 253 F.3d at 81–84 (plaintiffs failed to show dangerous probability of monopolizing the browser market), 95–96 (remanding the tying issue to the district court).

[140] In order for a firm to be deemed a "potential entrant" into a market, it must be shown that the firm has a "feasible means for entering" the market and "that those means offer a substantial likelihood of ultimately producing deconcentration of that market or other significant procompetitive effects." United States v. Marine Bancorporation, Inc., 418 U.S. 602, 633 (1974). The court did not find that Navigator or Java met these requirements.

[141] *Microsoft,* 253 F.3d at 53.

[142] *Id.* at ___.

[143] Ginsburg & Wong-Irvin, *Challenging Mergers*, *supra* note 134, at 2.

[144] Microsoft at 158.

had been sufficient to establish the required harm to competition, the court's discussion of causation would have been superfluous.

The connection between the conduct at issue and harm to competition in the relevant market was more attenuated in *Microsoft* than the direct harm to competitors found in the *Google* case. As the District Court explained in its remedy decision, whereas "Microsoft targeted its exclusionary conduct at emerging technologies outside the relevant product market . . . . Google's conduct was 'aimed at producers of established substitutes.'"[145] And Google's conduct did not just harm rivals by reducing their revenues; the Court found that the default agreements impaired the ability of rivals to improve the quality of their products and reduced the incentives of actual and potential rivals to invest and innovate.[146]

Judge Ginsburg and Wong-Ervin understand the *Microsoft* decision to reflect the "proof problem" where harm to competition depends upon "hypothetical technological development."[147] But the *Google* case presents that same proof problem. Google's default agreements harmed existing rivals by, among other things, impairing their ability to improve their quality and become more effective competitors; and they harmed potential new competitors by reducing their ability to acquire favorable distribution from browser and device providers subject to the agreements and by reducing their access to data and revenues. The court explicitly found that those harms reduced the incentive of actual and potential competitors to invest and innovate. Like the conduct at issue in the *Microsoft* case, the default agreements in *Google* harmed competition because they reduced the likelihood of hypothetical technological development that would increase competition in the future.

ii. The *Rambus* Case

Judge Ginsburg and Wong-Ervin also overlook critical distinctions between *Rambus* and *Microsoft*. *Rambus* was a monopoly creation case, not

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[145] United States v. Google LLC, 803 F. Supp. 3d 18, 77 (D.D.C. 2025).

[146] *Id.* The court in *Microsoft* did find that Navigator's market share in the browser market was reduced by Microsoft's anticompetitive conduct. *Microsoft*, 253 F.3d at 60. The District Court in the *Google* case found that the default agreements increased Google's share of search queries, but it did not quantify that effect. But this difference is immaterial. The district court found that the quality of Microsoft's browser increased over the relevant period, United States v. Microsoft Corp., 84 F. Supp. 2d 9, 98 ¶358 (D.D.C. 1999), and neither that court not the court of appeals determined what portion of Navigator's share decline was attributable to the illegal conduct.

[147] Ginsburg & Wong-Irvin, *Challenging Mergers*, *supra* note 134, at XXX (quoting *Microsoft*, 253 F.3d at 79).

a monopoly maintenance case. It concerned alleged misrepresentation by a firm that had no market power until after a standard-setting body (SSO) chose its technology for inclusion in a standard many years earlier. The issue in the case was whether the alleged misrepresentation caused a particular, discrete event—the decision of the SSO to choose Rambus' technology instead of other, alternative technologies—and thus caused the creation of Rambus' monopoly many years earlier.[148]

The court explained that the FTC held that "there was insufficient evidence that [the SSO] would have standardized other technologies" but for the alleged misrepresentations.[149] The FTC did not find that the alleged misrepresentation actually distorted the decision of the standard-setting body that gave rise to Rambus' monopoly, nor did it find that that conduct harmed rivals or had any other effect on competition. The court held that Rambus' conduct did not violate Section 2 because it did not harm competitors or otherwise contribute to Rambus' monopoly.[150]

The *Microsoft* case was very different for two reasons. First, by contrast to plaintiff's failure to prove any effect on rivals in *Rambus*, the *Microsoft* court found that Microsoft's conduct actually harmed both Navigator, a major competitor in the browser market, and Java. Second, *Microsoft* concerned the maintenance of an existing monopoly, not the creation of a monopoly in the past.[151] The court held that Microsoft's conduct had an actual, adverse impact on rivals that reduced the likelihood that its monopoly power in the operating system market would be eroded in the future.[152] Notably, the court in *Rambus* distinguished *Microsoft* for that reason,[153] and the FTC did not base its decision in *Rambus* on the causation standard that the court had embraced in *Microsoft* several years earlier.

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[148] 552 F.3d at 463.

[149] *Id.* at 464.

[150] *Id.* at 463–64. The FTC also argued that Rambus's misrepresentation violated Section 2 because it enabled Rambus to avoid having to promise to license its technology on FRAND terms. The court correctly rejected that argument as a matter of law on the ground that that alleged effect did not diminish the competitive constraint imposed by rivals in the relevant technology market and was thus not harm to competition. Id. at 464–67.

[151] The *Google* case is different from *Rambus* for the same reasons. The *Google* case involves maintenance of an existing monopoly, and the district court found that the default agreements directly harmed actual and potential competitors in the relevant search market.

[152] 253 F.3d at 79–80; *see also* FTC v. Actavis, 570 U.S. 136, 157 (2013) (the consequence of conduct that "seeks to prevent the risk of competition . . . constitutes the relevant anticompetitive harm").

[153] 522 F.3d at 464.

One implication of this difference in the harm alleged is that *Microsoft*, like *Google*, presents a "proof problem" that did not arise in *Rambus*. Both the fact that Rambus gained a monopoly in the relevant market and its allegedly unlawful conduct were readily observable. The case turned on whether that conduct caused the monopoly. By contrast, in monopoly maintenance cases like *Microsoft* and *Google*, the issue is whether the defendant's monopoly would have been diminished, or would be diminished in the future, in the absence of the defendant's conduct. Because the diminished monopoly is part of the hypothetical but-for world, it cannot be observed. Instead, as the court recognized in *Microsoft*, it could only be "infer[red]."[154]

Taken together, *Rambus* and *Microsoft* establish the following principles. *Rambus* means that, in a case focused on a discrete event of monopoly creation in the past, the plaintiff must prove that the allegedly unlawful conduct caused the event and thus creation of the monopoly. And *Microsoft* means that, in a case about maintenance of an existing monopoly, the plaintiff's initial burden requires showing that the conduct harmed existing or potential competitors and thus reduced the likelihood of increased competition in the future. Harm to existing and potential competitors must be established through robust case-specific evidence. But, once that anticompetitive effect is established, the remaining causation issue requires only that the harmful conduct "reasonably appear[ed] capable of making a significant contribution to … maintaining [defendant's] monopoly power."

b. Actual Versus Potential Competitors

There is another way of reading these cases that might lead to a different conclusion.[155] Under this reading, *Microsoft* was about exclusion of potential competitors that had not entered the market, and *Rambus* was about exclusion of actual competitors for selection by the SSO. Under this reading, the *Microsoft* standard is arguably inapplicable to *Google* because the default agreements were found to have harmed Bing and other existing competitors.

This argument finds no support in *Microsoft*. In the first place, while Microsoft's share of the relevant market was found to have been greater than 95 percent, it was not 100 percent; there were existing operating system competitors. The District Court found that Google's market share was nearly

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[154] 253 F.3d at 79.

[155] *See* Geoffrey A. Manne, *Defaults, Downloads and Distribution: Reassessing the Evidence in the* Google Search *Antitrust Case*, CONCURRENCES NO. 1-2025 at 44–51; *see also* Kai-Uwe Kuhn & Miroslava Marinova, *The Battle for Search*: United States v. Google LLC *and its Implications for Antitrust Law,* CONCURRENCES NO. 1-2025 at 38–44.

90 percent and nearly 95% on mobile devices.[156] If Navigator or Java had evolved into the kind of platform that the court envisioned, it could become a valuable complement to Microsoft's existing competitors as well as potential new competitors.

In addition, *Microsoft* rejected the distinction between existing and potential future competitors. The court said that harm to competition can be found both when the conduct is aimed at "nascent" or potential competitors and "when it is aimed at producers of established substitutes."[157] And it explained that "the underlying proof problem is the same" for both actual and potential competitors because "neither plaintiffs nor the court can confidently reconstruct a product's hypothetical technological development in a world absent the defendant's exclusionary conduct."[158]

Moreover, the argument is based on a formalistic distinction between actual and potential competitors. Especially in dynamic industries characterized by ongoing innovation, a law intended to protect competition cannot sensibly ignore the likelihood that both existing and potential competitors might by innovation or more mundane quality improvements or changes in business strategy become vital competitive forces in the future. *Microsoft* explicitly cautioned against giving "monopolists free reign to squash nascent, albeit unproven, competitors."[159] The default agreements in *Google* did not exclude only specific actual competitors; they created obstacles to all existing and potential future competitors. The District Court explicitly found that the agreements "reduced the incentive to invest and innovate in search," and that finding was not limited to any particular competitors or to existing competitors as a group.[160]

c. "Undesirable" Conduct and Uncertain Harm

In an interesting recent article, Jon Nuechterlein and Howard Shelanski support a narrower reading of *Microsoft*. They argue that the inference of causation contemplated in the passage from *Microsoft* quoted above can be made only after the conduct at issue has been found to be "undesirable" and that it is "circular" to infer causation from conduct that is "reasonably

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[156] *Google*, 803 F. Supp. 3d. at 85.

[157] Microsoft at 79

[158] Id.

[159] Id.

[160] *Google*, 747 F. Supp. at 236. The default agreements almost surely reduced the likelihood of search innovation, as discussed earlier. *See* notes XXX [114???] and accompanying text. More generally, see Richard J. Gilbert & A. Douglas Melamed, *Innovation Under Section 2 of the Sherman Act*, 84 ANTITRUST L.J. 1, 18–35 (2021).

capable" of causing such harm unless the conduct has already been found to have had an "unjustified anticompetitive effect."[161] They argue that Microsoft's conduct had such an effect because it "stunted Microsoft's only major rival in the browser market without justification."[162]

That argument provides no basis for concluding that the *Microsoft* standard is inapplicable to the *Google* case because the district court in *Google* found that Google's conduct both harmed Bing, Google's major rival in the relevant search market, and all other actual and potential rivals in that market and provided no procompetitive benefits. Plainly, if those findings are correct, Google's conduct harmed competitors "without adequate justification."[163]

Nuechterlein and Shelanski would distinguish the cases on the ground that the government proved that Microsoft's conduct "reduced Netscape's share of the browser market" but "did not prove anything similar" in the *Google* case.[164] That is not correct. The court in *Google* found that the default agreements reduced the shares of Google's rivals by diverting queries, data, and revenues of from them to Google.[165]

Nuechterlein and Shelanski also argue more broadly that the default rule in most antitrust cases is that the plaintiff must prove "by a preponderance of the evidence . . . that the relevant market in the but-for world would be more competitive than it is in the real world."[166] But the *Microsoft* decision rejects any such rule. The court in *Microsoft* did not find that Microsoft was more likely than not to lose its monopoly position in the relevant operating system market but for its anticompetitive conduct or even that "the relevant market in the but-for world would be more competitive than it is in the real world."

To the contrary, that court, like the court in the *Google* case, was able to find by a preponderance of the evidence only that the challenged conduct

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[161] Jonathan E. Nuechterlein & Howard A. Shelanski, *Who's Afraid of the But-For World? Microsoft, Google Search, and Probabilistic Theories of Antitrust Liability*, at 26–27 (SSRN, Dec. 5, 2025 (ANTITRUST L.J. forthcoming 2026)).

[162] *Id.* at 31 (citing Microsoft, 253 F.3d at 58–59).

[163] Cf., *id.* at 29 n.70 (arguing in connection with the *Rambus* case that conduct that has "no plausible justification" should be deemed to be "undesirable" even if it was not found to have had any harmful effect on rivals in any market).

[164] *Id.* at 35.

[165] *See supra* Sections II.A.1.i and III.A.2. The district court in *Microsoft* was able to quantify a reduction in Navigator's share of the browser market, United States v. Microsoft Corp., 84 F. Supp. 2d 9, ¶360 (D.D.C. 1999); but, like the court in *Google*, it did not determine what portion of that reduction was attributable to the illegal conduct. See note ____, supra.

[166] Nuechterlein & Shelanski, *supra* note 161, at 37–38.

harmed other firms and provided no procompetitive benefits. In *Google*, the challenged conduct directly harmed actual and potential rivals in the relevant market; in *Microsoft*, the directly harmed firms did business only outside the relevant market but had the potential to become complements to firms in the relevant operating system market or perhaps to enter that market themselves. In both cases, the harm to those firms reduced by an unquantified amount the likelihood that defendant's monopoly would be eroded in the future. The unanimous en banc court in *Microsoft* held that that was sufficient to support an inference of harm to competition in the relevant market because the defendant's conduct "reasonably appear[ed] capable of making a significant contribution to … maintaining [defendant's] monopoly power" in the relevant market. [167]

As we understand the cases, proof that the conduct at issue both harmed the defendant's rivals in the relevant market (either directly, as in *Google*, or indirectly and speculatively, as in *Microsoft*) and lacks a procompetitive justification is sufficient to establish a violation of Section 2 if it is also shown to have actually maintained defendant's monopoly or, as is especially likely to be the case with conduct aimed at nascent or potential rivals, that it is reasonably capable of doing so. In our view, that is good law and sound antitrust policy.

d. Competing for Defaults: Payments Versus Quality

One conspicuous part of the *Google* district court's opinion involves an Apple executive's testimony that there was "no price" that Microsoft could have paid Apple to switch the Safari default setting from Google Search to Bing.[168] This statement might seem to indicate that it is Google's superior quality—not its large payments—that won Google the Safari default. More generally, it might suggest that Google's contracts were not responsible for rivals' inability to secure defaults of their own, because Google's contracting partners were not willing to give default status to inferior search engines.

These inferences are mistaken, however. First, the court found on the basis of detailed evidence that Apple rejected Microsoft's bid primarily because it could not realistically match Google's existing payments.[169] During the negotiations, Microsoft offered to pay a full 100% of its revenue for the Safari default. [170] Apple assessed that this would generate about $20

[167] *Microsoft*, 253 F.3d at 79.

[168] *Google*, 747 F. Supp. 3d at 113.

[169] As explained above, a dominant search engine will almost always be able to outbid a smaller rival for default placement. *See supra* Section II.A.2.

[170] *Google*, 747 F. Supp. 3d at 111–14. The Apple executive's "no price" statement was made in connection with these events.

billion for Apple over the next five years—only half of what it expected to make from its existing default contract with Google.

This disparity is even more impressive when one considers that Google paid Apple only about 34% of its search revenue at that time.[171] In other words, a third of Google's revenue was worth twice as much as the entirety of Bing's revenue. This led one Apple employee to remark that "[c]learly, Microsoft can't commit to [Google's] numbers or even anything close to them."[172] Privately, Google reached the same conclusion. Its internal research determined that "it will not be possible for [Microsoft] to match our payments profitably."[173] Accordingly, an Apple executive (the same one quoted earlier) concluded that it was "a no brainer to stay with Google."[174] These facts indicate that Google's large payments—and Microsoft's inability to match them profitably—were the key to securing the Safari default.

Moreover, even if the evidence had suggested that Apple would have made Google the default even without Google's payments, it would not demonstrate that Google's deals were harmless. As explained above, the default agreements were conditioned on exclusive default status. They precluded the possibility that a rival might be able to persuade a browser or other access point to make it the default and thus caused dynamic harm by sapping rivals' incentive to invest in improving their quality.[175] Google would presumably not have agreed to pay billions of dollars conditioned on default status if it had expected to retain the defaults without having to pay for them.[176]

e. Error Costs

The subtext of the criticisms of the Court's conclusion that the default agreements caused the required injury to competition seems to be the concern, famously stated by Judge Frank Easterbrook, that false positives in antitrust

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[171] *Id.* at 114. Today, Google pays Apple 36%. Jennifer Elias & Rohan Goswami, *Alphabet pays Apple 36% of Safari search revenue, Sundar Pichai confirms*, CNBC (Nov. 14, 2023).

[172] *Id.*

[173] *Id.*

[174] *Id.* at 113.

[175] *Supra* Sections II.C.1.ii, II.C.2.i.

[176] A variation of the superior quality argument is the idea that, in the absence of the default agreements, Google would have obtained comparable default status by offering unconditional revenue sharing. That argument is contrary to the evidence. As explained above, Google's expert testified that unconditional revenue sharing was unrealistic, and Google rejected proposals by counterparties for non-exclusive defaults. *See* Section II.C.2(i).

are a more serious problem than false negatives.[177] There are three reasons, however, why that proposition seems inapplicable, or at the very least should apply with less force, in the context of the default search agreements. For one thing, the costs of false positives are minimized when, as the court found with respect to Google's default agreements, the harmful conduct provides no benefits.

More important, the costs of a false negative are likely to be especially great with respect to the default agreements. First, those agreements reduced the likelihood of search innovation. It has long been understood that innovation contributes far more to economic welfare than avoidance of deadweight loss.[178] Second, the argument for tolerating risks of false negatives rests heavily on an expectation that competition will ameliorate market power and thus the costs of false negatives. But conduct by an existing monopoly that raises entry barriers or otherwise harms actual or potential competitors that might threaten the monopoly undermines the very process by which competition might ameliorate the harms from false negatives and thus weakens the argument for tolerating risks of them.[179]

3. *What About AI?*

AI seems to be on everyone's mind, and some believe that it will fundamentally change the search business.[180] Popular large language models like ChatGPT have introduced web search functions that are substitutable with traditional search engines to some extent. It might therefore be suggested that this potential new wave of competitors makes the case against Google inappropriate, as it might suggest that Google is already on the verge of losing its search monopoly.

There are two problems with this idea. First, there is a well-developed body of law regarding when the prospect of new entry or new innovation might cure an existing competition problem. In brief, the cases require showing that the new entry or innovation will be sufficiently timely, likely,

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[177] *See, e.g.*, Frank Easterbrook, *Vertical Arrangements and the Rule of Reason*, 53 ANTITRUST L.J. 134 (1984); but *see* Jonathan B. Baker, *Taking the Error Out of 'Error Cost' Analysis: What's Wrong with Antitrust's Right*, 80 ANTITRUST L.J. 1 (2015) (criticizing Easterbrook's proposition).

[178] It is broadly understood that innovation accounts for a large share of total factor productivity, and a small change in the rate of productivity growth can offset a large change in deadweight loss. *See, e.g.*, Oliver E. Williamson, *Economies as an Antitrust Defense: The Welfare Tradeoffs*, 58 AM. ECON. REV. 18 (1968).

[179] *See, e.g.*, Erik Hovenkamp & Kevin Bryan, *Startup Acquisitions, Error Costs, and Antitrust Policy*, 87 U. CHICAGO L. REV. 331 (2020).

[180] *See Google*, 747 F. Supp. 3d at 39–42 (discussing some of the evidence about the impact of AI on search); 803 F. Supp. 3d at 45–46 (same).

and impactful to eliminate the competitive harm.[181] Conjecture about AI falls far short of meeting these legal requirements. Second, the default agreements raise barriers to entry and thus reduce the likelihood of search innovation even with AI.

A belief that Google's search monopoly is fragile or likely to be short-lived because of AI or otherwise might be relevant to designing appropriate remedies. But black-box conjecture about innovations that might bring profound changes sometime in the future provide no basis for determining whether the default agreements have harmed competition.

4. *Discouraging Apple's Expansion into Search*

Google's large payments for default status on Apple devices might have harmed competition by deterring Apple from introducing its own competing search engine.[182] The Justice Department did not allege that Apple agreed not to enter the search market in exchange for the default agreement payments.[183]

Instead, the Justice Department alleged that (a) Google's large payments discouraged Apple's entry into search and that (b) certain contractual terms prevented Apple from further developing some search-related features.[184] The district court agreed with (a) and concluded that this contributed to the maintenance of Google's search monopoly.[185] But it rejected (b) for lack of factual support.[186]

In the absence of an agreement that Apple would not enter the search market, the impact of the default agreements on Apple is best understood as the result of a unilateral make-or-buy decision by Apple. In this framing, Apple had to decide whether to develop its own search engine or to use Google's as the default. It likely made that decision based on which was more profitable to it. That depended on a number of factors, including the opportunity cost of giving up the payments Apple currently receives from Google. Those payments presumably affected Apple's decision, just as the offer of a reduced input price presumably affects an ordinary decision by a firm whether to make or buy the input. Businesses facing a make-or-buy

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[181] *See, e.g.*, FTC v. Sanford Health, 926 F.3d 959, 965 (8th Cir. 2019); *see also* FTC v. Staples, Inc., 970 F. Supp. 1066 (D.D.C. 1997) (rejecting argument that potential entry would prevent harm to competition); U.S. Dep't. of Just. & Fed. Trade Comm'n, MERGER GUIDELINES § 3.2 (2023) (new entry can eliminate competitive harm only if the entry is "timely, likely, and sufficient in its magnitude").

[182] *Google*, 747 F. Supp. 3d at 240–44.

[183] *Id.*

[184] *Google*, 747 F. Supp. 3d at 240–44.

[185] *Id.*

[186] *Id.*

decision routinely choose the "buy" option. That is not generally a cause for concern even though it can often be characterized as a decision not to enter the input market.

To be sure, Google's deals could still contribute to the maintenance of its search monopoly. Its payments to Apple constituted a significant fraction of Apple's company-wide profits. Without those payments, the calculus of Apple's make-or-buy decision would change significantly. Moreover, given Apple's control of the Safari default and its immense resources, it does not seem far-fetched to suppose that an Apple search engine could equal or surpass Bing as the leading alternative to Google Search.[187] But if the default agreement is not itself illegal, and as long as Google's payments are not so high as to be predatory, its revenue share payments are likely to be regarded as a lawful means of inducing Apple to choose the "buy" option in its make-or-buy decision by sharing with Apple a portion of the revenues generated by its collaboration with Google.

B. Assessing Potential Procompetitive Justifications

A conclusion that broad default agreements by a dominant search engine like Google had the requisite anticompetitive effect shifts to the defendant the burden of identifying procompetitive benefits from the agreements. There are several possible benefits from the agreements.

1. *Improving the Quality of Google's Search Engine*

Because of scale effects, Google's defaults increase the quality of its search algorithm to some extent because they lead more consumers to use Google and thus generate more data for it. It is unlikely, however, that this quality improvement could serve as a procompetitive justification for Google's agreements. For one thing, the District Court did not discuss any such possible efficiency, and it appears from the opinion that Google did not argue that the default agreements might be justified on the ground that they led to an improvement in Google's search engine. We do not know why Google did not claim a search quality justification. The decision might have been based on litigation tactics unrelated to the merits of the argument. But it might also have reflected a lack of factual support for a quality improvement justification.

As discussed above, any increase in Google's quality is likely too small to prevent Google's default agreements from harming competition and consumers on balance. That is because there are declining quality returns to

[187] Safari is much more popular than Microsoft Edge, making the Safari default far more valuable than the Edge default.

data. As a search engine gains users, its quality increases. If quality increases linearly, there are constant returns to user data. Alternatively, there could be diminishing returns to user data. Figure 2 below illustrates the difference between these possibilities. (Note that the welfare graphs in Section II.A.1.c assume constant returns for simplicity.)

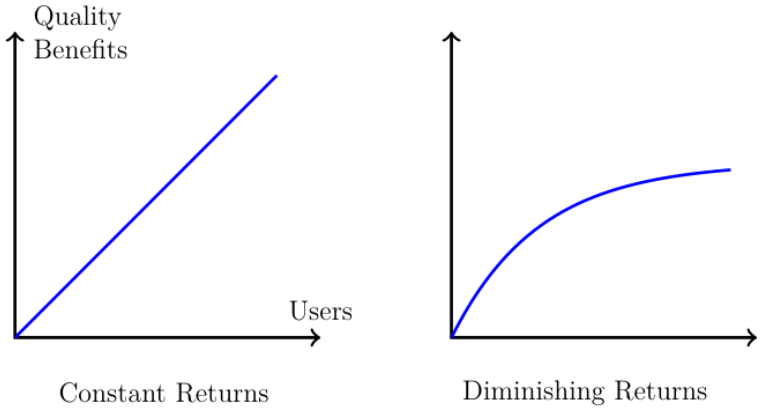


FIGURE 2: SCALE EFFECTS EXHIBITING CONSTANT RETURNS TO SCALE (LEFT) VERSUS DIMINISHING RETURNS TO SCALE (RIGHT).

Empirical evidence suggests that there are diminishing returns to user data.[188] For a large search engine that already has a lot of users, obtaining additional user data does not enhance quality very much. But for a small search engine, the same increase in user data could raise quality substantially. Because Google's defaults therefore diminish rivals' quality by much more than they raise Google's quality, it is unlikely that Google's deals would increase consumer welfare due to their effects on search quality.[189]

There are two other problems with the quality justification. First, it is based on the idea that Google should be permitted to compete for data from search queries.[190] But even if Google's winning auctions for data would

[188] *See, e.g.*, Catherine E. Tucker, *Online Advertising and Antitrust: Network effects, Switching Costs, and Data as an Essential Facility*, CPI ANTITRUST CHRONICLE, April 2019 ("most studies suggest there are, at best, concave returns to data—that is, initially data can indeed provide performance advantages, but these performance advantages quickly decline as the firm obtains more data.")

[189] *See* Hovenkamp, *supra* note 3. This is the flip side of the possibility that that narrow defaults by a small search engine would increase consumer welfare. *See* Section II.B.1.

[190] Language in National Soc'y of Prof. Engineers v. United States, 435 U.S. 679, 693–95 (1978), might be read to mean that otherwise anticompetitive conduct cannot be justified on the ground that it will enable improved product quality. But that case

improve search quality overall, it would not be a cognizable justification if Google had paid predatorily high prices for the data.[191] While the subtleties of predatory bidding can be complex, one conceptually simple screen would be to inquire whether the incremental revenues that Google earned as a result of the quality improvement in its search engine enabled by the incremental data gained from default agreements exceeded the costs incurred (i.e., the revenue sharing paid) by Google for those agreements.[192] If the revenues did not exceed those costs, it is likely that it would make no economic sense to pay such prices for quality improvement reasons and that there must have been some other reason, such as excluding rivals, for Google to incur such costs for the default agreements.[193]

Second, as explained above, Google could probably have obtained almost the same amount of data, at least in the short run, with less harm to competition if it had used the alternative of unconditional revenue payments, instead of payments for default agreements.[194] There was, in other words, a less restrictive alternative.[195]

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concerned an agreement not to compete and a justification based on the argument that competition is bad for product quality. By contrast, a quality justification for the default agreements would be based, not on the argument that competition is bad for quality, but on the very different argument that Google should be permitted to compete for valuable inputs to product quality. *Microsoft* itself explicitly acknowledged that product quality improvement could itself be a cognizable justification. *See Microsoft*, 253 F.3d at 59 (procompetitive justifications include "enhanced consumer appeal").

[191] A buyer's price bid is predatory if it is so high that it could be profitable only by virtue of cutting rivals off from an important input. *See generally* Weyerhaeuser Co. v. Ross-Simmons Hardwood Lumber Co., 549 U.S. 312, 323–24 (2007).

[192] We see this revenue/cost comparison as a screen, not a definitive test of lawfulness. Even if the incremental revenues were greater than costs incurred to obtain them, the search quality benefits might not be sufficient to justify the default agreements. The simple revenue/cost comparison does not take into account either the dynamic and innovation costs of weakening Google's search competitors or the fact that Google would be able to use monopoly revenues from the general search text ad market to bid against rivals that have no market power and are thus unable to charge supracompetitive prices. *See generally* Gilbert & Newbery, *supra* note 89.

[193] *See generally*, Gregory J. Werden, *What Judge Mehta Missed in the* Google *Case*, CONCURRENCES NO. 1-2025 at 26–30 (arguing that the lawfulness of the search agreements should be assessed by applying the No Economic Sense test).

[194] *See supra* Section II.C.2.

[195] This assumes that unconditional revenue sharing would be legal. If it would be illegal notwithstanding its contribution to Google's search quality, it is very unlikely that the more restrictive default agreements could be justified on the ground that they enable quality improvements.

2. *Default Agreements Give Consumers What They Want*

The District Court briefly addressed and rejected a different argument related to product quality. The argument is that the default agreements improve the user experience by providing immediate and easy access to a search engine.[196] Because immediate and easy access to an unwanted search engine would not enhance the user experience, the argument would seem to depend on the unstated premise that the agreements provide easy access to the search engine that the vast majority of consumers prefer.

While superficially appealing, there are a number of problems with this argument. Most important, it is static—it considers only the current state of the market, ignoring how the agreements might affect the evolution of competition and technological advancement over time. If the default agreements weaken rivals and reduce the likelihood of competitive entry or chill investment in quality-improving innovations, they are likely to harm long-term consumer welfare. And, as we have emphasized, these kinds of dynamic harms are central to the argument that Google's broad defaults are likely anticompetitive.

Consider an analogy. Suppose a dominant tire maker's contracts with automakers ensure that its tires are installed on all new vehicles in the United States. The firm might argue that this is good for consumers if evidence shows that its tire brand is the most popular. But to the extent that this deal excludes rivals by foreclosing them from an important distribution channel, it is likely to harm all consumers by depriving them of greater competition.[197] This harm is dynamic and consists mainly of suppressing investment and entry. If rivals are cut off from a key distribution channel, then investing in better technology might do little to increase their earnings. And, similarly, bringing a high-quality new product to market is unlikely to be profitable if an entrant cannot distribute that product effectively. A corollary is that the defendant's status as the most popular brand is not necessarily the result of successful competition on the merits. It might simply reflect that its restraints have prevented the emergence of serious competitors.

It is well established in economics that restraints implemented by less popular firms can have important procompetitive benefits, even if they divert some consumers away from a more popular product. This could be because

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[196] *See Google*, 747 F. Supp. at 248–50.

[197] Even those consumers who prefer the dominant firm's brand over those of competitors can be harmed when a dominant firm excludes rivals because the exclusion weakens rivals and thus enables the dominant firm to exert more market power over its customers.

the restraints facilitate entry and investment. We discussed one prominent example of this above.[198]

Moreover, even if we focus on just static competition, Google's popularity does not imply that its broad defaults are necessarily good for consumers. For example, as noted earlier, diminishing returns to data imply that Google's broad defaults might well do more harm than good (even in the short run), because they reduce rival quality by much more than they increase Google's quality.[199] This harms even Google users to the extent that it increases Google's market power and thereby reduces the pressure on Google to offer a better user experience.

In addition, Google's broad defaults might replace alternative distribution schemes that would be more beneficial to consumers. For example, browser and device providers might make Google search the default on some versions of their products and other search engines the defaults on other versions and enable consumers to choose which version they want based on which search engine they prefer.

3. *Increased Search Quality Competition*

The court in *Google* rejected the argument that Google's default contracts would stimulate quality competition—leading all firms to invest more in their technology—by creating a "contest to be the default."[200] As we explained above, the breadth of Google's defaults, combined with its ability and incentive to vastly outbid rivals, ensure that rival search engines have no real chance of acquiring default placements.[201] This makes rivals' incentives for investment and entry weaker, not stronger.[202] That is what the district court found as well.[203] Moreover, the incentives of search engine providers to improve their quality are increased when default status depends on search quality and not just payments conditioned on default status.

4. *Out-of-Market Benefits*

The District Court also rejected claimed justifications based on arguments that Google's default: (i) promoted competition in the browser

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[198] *See supra* Section II.B.2 (discussing exclusive dealing agreements in video games).

[199] *See supra* Section II.A.3.i.

[200] *Google*, at 250.

[201] *Supra* Section II.A.2.

[202] Id.

[203] *Google,* at 236-246.

market; (ii) reduced prices of mobile devices; and (iii) increased quality of Android devices.[204]

Before discussing these possibilities, we note at the outset that they all involve out-of-market benefits. As such, even if proven, they may not be cognizable justifications for harm to competition in the search market.[205] Below we first discuss these possible efficiencies individually, identifying problems with each argument. We then discuss some more general problems with these claimed efficiencies.

a. Promoting Competition in the Browser Market

Some of Google's defaults might have stimulated competition in the browser market. First, Google's default payments might be a primary revenue source for small, third-party browsers. For example, the court noted that Google's default payments comprise 80% of Firefox's earning.[206] If Google were prohibited from buying defaults, Firefox would make less money and might invest less in quality or even exit the market.

Additionally, Google's decision to create the Chrome browser might have hinged in part on its ability to make its own search engine the default search engine on that browser. Without the additional revenues that Google expected to gain from default status, Google might have decided not to invest in development of the browser.

Importantly, however, these possible efficiencies would not require Google to obtain broad defaults covering 70% of the search market. For example, even if the Firefox default is viewed as reasonably necessary to maintain browser-market competition, this default covers only a small share of the search market. Most of Google's contracts, including its Safari default, could not be justified by the need to fund small browsers like Firefox. Similarly, while Google's incentive to develop Chrome may have hinged on giving itself the default position on Chrome, Google could do that without also entering into default contracts with many other firms.

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[204] *Id.* at 252-255.

[205] *See* United States v. Philadelphia National Bank 374 U.S. 321, 370 (1963) (rejecting the argument in a merger case that "anticompetitive effects in one market could be justified by procompetitive consequences in another" market). *See generally, e.g.,* Louis Kaplow, *Out of Market, Out of Mind,* 87 ANTITRUST L.J. 547 (2026) (discussing whether out-of-market benefits should be considered). Whether out-of-market benefits are cognizable under the Sherman Act is an open question, which the Supreme Court recently declined to resolve. Nat'l Collegiate Athletic Ass'n v. Alston, 594 U.S. 69, 84–85 (2021).

[206] *See Google*, 747 F. Supp. 3d at 253.

b. Subsidization of Mobile Devices

Google's payments to Apple and Android firms could in principle act like a subsidy for mobile devices. While Bing and other rivals could bid for default status if Google were not able to, they would almost certainly pay less because the absence of bidding by Google would reduce competitive pressure on other bidders to increase their bids[207] and because, as explained above, Google is willing to pay more than its rivals for default status.[208] The additional payments by Google might have increased the incentive of device manufacturers to increase device sales, and that could induce the firms to reduce device prices or increase device quality.

However, there appears to be no evidence of such an effect. If Google's defaults have such an effect, then eliminating the defaults (and the associated payments) and replacing them with a choice screen should lead device prices to rise. Decarolis, Li, and Paternollo recently conducted an empirical investigation of the impact of choice screen mandates implemented by regulators in three foreign jurisdictions (the E.U., Russia, and Turkey).[209] In all three cases, the choice screens were limited to Android devices and thus did not change pricing incentives for non-Android devices. As the authors noted, if elimination of the defaults and the revenues they brought to device providers led to increases in Android device prices, we would expect to observe a reduction in Android's share of the mobile device market.[210] The authors did not observe any such effect and concluded that there was no significant price effect from the defaults.[211] Similarly, in the *Google* decision, the court noted that "the evidence is thin" that the payments induce device makers to set lower prices or to raise quality.[212]

In addition, Google's default payments are not structured in a way that would be conducive to significant price effects. For default payments to subsidize device sales, a device maker must earn larger default payments when it sells more devices. The problem is that a large portion of device sales are upgrades by existing customers whose search activity (on their older devices) was already contributing to the default payments. Because the new device replaces an existing device, the user's contribution to the revenue share

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[207] *See* Hovenkamp, *supra* note 3, at 26–27.
[208] *See infra* Section II.A.2.
[209] Decarolis et al., *supra* note 4.
[210] *Id.* at 17.
[211] *Id.*
[212] *Google*, 747 F. Supp. 3d at 254. *See also id.* at 256 ("Google has produced little industry evidence from any [device maker] or carrier that views the Android agreements and their revenue share payments as enhancing competition among devices").

payments is not affected by the sale of the device and thus provides no additional incentive for the device maker to increase its device sales.

To see why, consider Google's Safari default. Unlike a true subsidy of device sales, which would be based on *iPhone sales*, Google's default payments are based on *search activity on iPhones*. Users of older iPhones contribute to the payments just as much as users of new iPhones. The large majority of iPhone sales—more than 80%, according to a recent study[213]—are upgrades by existing iPhone users. These sales do not increase the default payments to Apple (and hence are not subsidized) because these buyers were already contributing to the default payments by their search activity on older iPhones.

This can be illustrated by a numerical example. Suppose Google's default payments confer (on average) $10 to Apple for every iPhone user. Thus, we might naïvely guess that the defaults generate an effective iPhone subsidy of $10 per device. But, as we will see, the actual subsidy effect is far smaller.

Suppose that, if Apple cuts the iPhone price by $1, it would sell an additional 100 units. The large majority of those sales—say, 80—are upgrades by users of older-model iPhones. Only the other 20 buyers are new to the iPhone ecosystem, so it is only those sales that increase the number of iPhone users and thus Google's payments to Apple. Accordingly, Apple's total payment receipts would increase by just $20 \times 10 = \$200$. This corresponds to an average per-unit subsidy of just $2 per device, far less than the naïve guess of $10 per unit, and only about 20% of the (per-user average) default payment acts like a subsidy.[214]

c. Promoting Android Quality

Google argued that its Android agreements fund the Android ecosystem, increasing the quality of Android devices and thereby enhancing competition in the smartphone market more generally.[215] However, Google's default payments are not conditioned on increased investment in browser or device

[213] One recent survey found that 83% of iPhone sales were upgrades. *See* Michael Potuck, Report reveals Android users switching to iPhone at 5-year high, 9TO5Mac (May 17, 2023) (discussing the survey).

[214] The Android payments could have a less attenuated subsidy effect insofar as Android users may often upgrade to an Android phone from a different manufacturer (e.g. from an LG to a Samsung). This is likely much more common than switching from iPhone to Android. However, this is countervailed to some extent by the fact that Google's default payments to Android firms are far smaller than its payments to Apple. Additionally, the empirical study discussed above found that Google's defaults do not have a significant effect on Android device prices.

[215] *Google*, 747 F. Supp. 3d at 253–54.

quality or on the sale of additional devices. While they provide additional revenue that *could* be invested in quality, there is no particular reason to assume they would be used for that purpose. And, as the *Google* court noted, "the evidence is thin that Android device makers and carriers use Google's revenue share in any of the ways Google Suggest."[216]

Moreover, if Google's goal is simply to fund investment within the Android ecosystem, there are less restrictive means of doing so. Google identifies no reason why providing such funding requires it to obtain exclusive default privileges on almost all browsers.

d. Other Problems

Google argues that, even if the efficiencies discussed above involve out-of-market benefits, they translate into cognizable benefits in the search market because of complementarities between search, browsers, and mobile devices.[217] However, as we have discussed, Google's broad defaults stifle dynamic competition by chilling the entry and investment by rivals. Google provided no concrete evidence that potential out-of-market benefits would have any benefits in the search market, let alone that such benefits might be strong enough to outweigh the anticompetitive effects of the default agreements.

There is, moreover, a more fundamental conceptual problem with the claimed out-of-market benefits. Anticompetitive vertical agreements generally involve payments by the beneficiary of the reduced competition in exchange for the counterparties' acquiescence in the anticompetitive scheme. Thus, for example, a monopoly that wants its distributors or customers to deal exclusively with it usually has to compensate the distributors or customers one way or another. But the courts have never treated that compensation—which usually reflects a sharing of the additional monopoly rents created by the scheme—as a procompetitive justification for the scheme.[218] To the contrary, far from being a procompetitive benefit, the compensation is better regarded as an inducement for the counterparties' participating in anticompetitive conduct.

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[216] *Id.*

[217] *Id.* at 252 (noting Google's argument that these efficiencies "redound to the benefit of the general search market by increasing output.")

[218] See FTC v. Actavis, Inc., 570 U.S. 136, 158 (2013) (explaining that if the only justification for exclusionary conduct is to "share . . . monopoly profits, . . . the antitrust laws are likely to forbid the arrangement").

IV. REMEDY

If Google's search engine defaults violate the antitrust laws, the violation would require a suitable remedy. We discuss below the basic principles that we think should guide the remedy inquiry and how those principles might be applied to a variety of remedies that have been proposed in connection with the Google Search case.[219] For purposes of that discussion, we assume the correctness of the district court's decision finding that the search engine defaults were unlawful.

A. SOME BASIC PRINCIPLES

Antitrust is law enforcement. Remedies in an antitrust action, as the term "remedy" suggests, are intended to provide an antidote for the specific violation found by the court. In a private case, the remedy can include damages to compensate the plaintiff for harm caused by the unlawful conduct. In a criminal case, the remedy can include penal sanctions like fines and incarceration. The government's case challenging Google's search engine defaults is neither a private case for damages nor a criminal case, and it is hard to imagine a criminal case challenging the defaults.

In a civil enforcement action brought by the government, like the government's case challenging Google's search engine defaults, equitable remedies serve two basic purposes. One is to terminate the conduct that was found to be illegal and prevent its recurrence.[220] The other is to restore competition that was damaged as a result of the illegal conduct.[221]

Courts have described the purposes of equitable antitrust remedies in various ways. The descriptions include "pry open to competition a market that has been closed by defendant's illegal restraints;"[222] "redress the violation and restore competition;"[223] "unfetter a market from anticompetitive conduct, 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

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[219] The Justice Department's proposed remedies can be found in United States v. Google LLC, No. 1:20-cv-03010-APM, Plaintiffs' Revised Proposed Final Judgment, ECF No. 1184-1 (D.D.C. Mar. 7, 2025).

[220] *E.g.,* Int'l Salt Co. v. United States, 332 U.S. 392 (1947). Both the Sherman Act, 15 U.S.C. §4, and the Clayton Act, 15 U.S.C. §25, explicitly authorize district courts to "prevent and restrain" conduct that violates the antitrust laws.

[221] *E.g.,* United States v. Gypsum Co., 340 U.S. 76, 88 (1950) ("cure the ill effects of the illegal conduct"); United States v. International Harvester Co., 274 U.S. 693, 697 (1927) ("restore competitive conditions").

[222] *Int'l Salt Co.*, 332 U.S. at 401.

[223] Ford Motor Co. v. United States, 405 U.S. 562, 573 (1972) (*quoting* United States v. E.I. du Pont de Nemours & Co., 366 U.S. 316, 326 (1961)).

monopolization in the future;"[224] and "forward looking provisions" affecting conduct that "played no role" in the violation.[225] In substance, and in the context of the violations found and remedies ordered in the various cases, the varying descriptions all reflect in one way or another the two basic purposes identified above.

There is another principle that applies to all equitable remedies, including antitrust remedies. It is that the "scope of the remedy must be proportional to the scope of the violation" and "must extend no further than necessary to remedy the violation."[226] The remedy must be "tailored to the harm suffered,"[227] and the court must "fit[] the remedy to the wrong or injury that has been established."[228] As the court put it in the *Microsoft* case, the "[m]ere existence of an exclusionary act does not itself justify full feasible relief against the monopolist to create maximum competition."[229]

B. TERMINATING THE ILLEGAL CONDUCT

Designing a remedy that will be effective in terminating the illegal conduct requires consideration of two sets of issues. First, the court needs to determine the nature and breadth of the conduct that was found to be illegal. Second, it needs to design a remedy that will both prohibit the illegal conduct and prevent circumvention of the prohibition.

1. *The Scope of the Illegal Conduct*

In some cases, determining the scope of the illegal conduct is straightforward. In a case about an agreement among competitors to fix prices, for example, the agreement is categorically illegal. But an agreement among competitors to establish a joint venture might not be entirely or

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[224] United States v. Microsoft Corp., 253 F.3d 34, 103 (D.C. Cir. 2001) (en banc) (per curiam); *see also* Epic Games, Inc. v, Google (9th Cir., July 31, 2025) (the remedy should "deny to the defendant the fruits of its statutory violation").

[225] Massachusetts v. Microsoft Corp., 373 F.3d 1199, 1215 (D. Cir. 2004).

[226] Brown v Plata, 563 U.S.493, 531 (2011); *see also* Ginsburg v. NV/SA, 623 F.3d 1229, 1235 (8th Cir. 2010) (court must balance benefit and hardship caused by remedy); New York v. Microsoft Corp., 224 F. Supp. 2d 76, 102 (D.D.C. 2002) ("a proportionality between the evidence of the causal connection and the severity of the remedy").

[227] Ragsdale v. Wolverine World Wide, Inc., 535 U.S. 81, 89 (2002); *see also* Herbert Hovenkamp, *Google Search and Antitrust's Remedial Goals*, 106 B.U. L. REV., 101, 124 (2026) ("[T]he remedy must be linked to a proven antitrust violation . . . .").

[228] Salazar v. Buono, 559 U.S. 700, 718 (2010); *see also* Ford Motor Co. v, United States, 405 U.S. 562, 573 (1972).

[229] *Microsoft*, 253 F.3d at 106, 107.

categorically illegal.[230] In such a case, the court needs to decide what aspects of the joint venture agreement were illegal.

Similarly, some exclusionary practices are easy to isolate from lawful conduct. In *Conwood Co. v. United States Tobacco Co.*, for example, the defendant harmed competition by providing false information to retailers and removing without permission a competitor's store racks and advertising materials.[231] There was no ambiguity about which parts of those kinds of acts were illegal.

Determining the scope of the illegal conduct found in the *Google* search case is not so straightforward. Google's search defaults are a result of four different types of conduct—Google's unilateral decision to make Google search the default on Googe's Chrome browser and three different types of contracts with browsers, OEMs, and cellular carriers.

The district court found that Google violated Section 2 of the Sherman Act by maintaining its monopoly "through its exclusive distribution agreements."[232] It seems clear that the court did not find Google's decision to make its search engine the default on its Chrome browser to be illegal. That decision did not entail an exclusive distribution agreement, and the lawfulness of that product design decision was not litigated.

The court was focused on distribution agreements, but it is unlikely that it found all of the provisions of all of the relevant distribution agreements to be illegal. The MADA agreements in particular encompass far more than search defaults. Those agreements require OEMs of Android devices that wish to install any of Google's proprietary mobile applications (including the Google Play store) on their devices also to preload 11 specified applications, nine of which are not directly related to search. The court did not find that the requirement regarding those nine other applications was unlawful, and a prohibition on Google's enforcing that requirement in its existing agreement or including such a requirement in future agreements could not be justified as terminating or prohibiting unlawful conduct. For the same reason, an injunction designed to terminate or eliminate conduct found to be unlawful would permit Google to enter into agreements requiring preinstallation of the Chrome browser provided that the browser did not include a default to Google search.

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[230] *See, e.g.*, NCAA v. Bd. of Regents of the Univ. of Okla., 468 U.S. 85 (1984) (condemning a horizontal restraint imposed by an otherwise lawful joint venture).

[231] 290 F.3d 768, 778–79 (6th Cir. 2002).

[232] *Google*, 747 F. Supp. at 276.

The court held that the "exclusive default agreements" as a whole were illegal, but the court did not say that exclusive default agreements are categorically illegal. To the contrary, quoting an earlier Supreme Court decision, the court stated that "[t]he share of the market foreclosed is important because, for the contract to have an adverse effect upon competition, 'the opportunities for other traders to enter into or remain in that market must be significantly limited;'"[233] and it held that the 50% share foreclosed by the default agreements was sufficient to establish a violation of Section 2.[234] It thus seems likely that the court would not have found a violation if Google's defaults had been (collectively) substantially narrower in scope. For example, the court might have found that a default agreement with Mozilla, whose browser accounts for less than 5% of search queries, would not, standing by itself, be illegal; if that is the case, the remedy might permit such an agreement in the future.[235]

Ideally, a court would make its best effort to determine the scope of the illegal conduct when designing a remedy intended to terminate the illegal conduct, but the court cannot as a practical matter be expected to litigate hypothetical questions about narrower default agreements. Where the outer bounds of lawful agreements of the type found to be illegal have not been determined in the liability decision, uncertainty will remain.[236]

The court found that Google search is the default on 70% of all search access points. That total consists of defaults on Chrome browsers downloaded by users (20%) and agreements with OEMs, other browsers, and wireless carriers (50%).[237] If, as discussed above, the 20% attributable to Chrome downloads is beyond the scope of a remedy terminating illegal default agreements and Google is not otherwise required to divest Chrome, the scope question comes down to whether the court implicitly found that agreements

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[233] 747 F. Supp. at 216–17 (quoting Tampa Elec Co. v. Nashville Coal Co., 365 U.S. 320, 328 (1961)).

[234] 747 F. Supp. at 223.

[235] A remedy that permitted Google to enter into default agreements for a modest share of the search access points could permit either exclusive agreements with selected browsers, OEMs, or carriers or non-exclusive default agreements that would make Google search the default on only a portion of the search access points provided by the counterparties. In either case, the aggregate foreclosure created by the agreements would not be permitted to exceed a specified share of search access points.

[236] The Supreme Court has repeatedly counseled that uncertainty about the scope of the remedy should be resolved in favor of the government. *See, e.g.*, United States v. EI du Pont de Nemours & Co., 366 U.S, 316, 334 (1961) ("all doubts as to the remedy are to be resolved in [the government's] favor"); Ford Motor Co. v. United States, 405 U.S. 562, 575 (1972) (relying on *du Pont*).

[237] *Google*, 747 F. Supp. at 221–23.

which would have increased Google's share above 20% by some amount less than 50% would have been lawful.

The court's liability decision provides little guidance as to what the maximum permissible breadth of Google's defaults would be. The court focused on the aggregate breadth of the agreements and did not analyze the different agreements separately.[238] It also discussed various qualitative factors that supported liability but did not connect those factors to the breadth of the defaults.[239]

Exclusive dealing cases often raise the same problem about the scope of the unlawful conduct and thus the scope of the remedy. When sufficiently limited in scope, exclusive dealing is usually lawful. However, there is no bright line foreclosure share that divides lawful from unlawful exclusive dealing, and the court in *Microsoft* stated explicitly that foreclosure shares that would be lawful under Section 1 might in appropriate circumstances violate Section 2.[240] Given this uncertainty and the fact that courts rarely undertake the counterfactual analysis of determining what hypothetical alternatives to the agreements at issue might be lawful, courts rarely try to fine-tune their prohibition of the unlawful conduct at the remedy stage. Instead, they typically just prohibit the defendant from engaging in *any* exclusive dealing for some period of time.[241]

Although these injunctions necessarily proscribe even very narrow (and thus presumably lawful) exclusive dealing agreements, they can be justified on administrative grounds. They avoid the need to engage in speculative analysis of counterfactual agreements; the court need not attempt to discern the precise level of breadth at which an exclusive deal becomes unlawful; and an outright ban on exclusive dealing is likely easier to enforce than a partial ban.[242] For the same reasons, a court could reasonably prohibit Google from entering into any default agreements for some period of time.

Three other considerations support this conclusion. First, if we assume the correctness of the court's finding that there is no procompetitive justification for Google's default agreements, there is little risk that a total

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[238] *Id.*

[239] *Id.* at 223–26.

[240] *See, e.g.*, *Microsoft*, at 70.

[241] *See, e.g.*, Final Judgment, United States v. Dentsply Int'l, Inc., No. 99-005-SLR, 2006 WL 2612167 (D. Del. Apr. 26, 2006) (prohibiting the defendant from engaging in any exclusive dealing for 7.5 years).

[242] For example, an order that permitted exclusive dealing or default agreements up to a certain percentage of the market could require detailed accounting to monitor the defendant's compliance. Such a remedy would also be sensitive to market definition.

prohibition on default agreements would cause harm to competition because of overbreadth. Second, because Google is already the default on user-downloaded Chrome—a unilateral default that covers 20% of the market—the court might reasonably be less permissive of additional agreements that raise Google's default share above 20%. Third, while a blanket prohibition on default agreements likely goes beyond the termination of illegal conduct, this excess breadth of the injunction could serve the second remedial objective of restoring competition. The default agreements harm competition by diverting revenues and data from rival search engines; a prohibition on such agreements would lead to increased revenues and data for those rivals and thereby help restore competition to the search market. Thus, a prohibition on all default agreements would not need to be entirely justified as a means of terminating illegal conduct.

Prohibiting Google from entering into any search default agreement might be harmful to small counterparties, Mozilla in particular, that depend on Google's payments. It might be suggested that an exception should be made for Mozilla or perhaps other parties similarly situated.

While that kind of equitable consideration is properly taken into account in fashioning discretionary remedies, including remedies intended to restore competition,[243] it seems inappropriate for a court to permit illegal conduct in order to enable third parties to benefit from such conduct.[244] For one thing, if Google were prohibited from paying for default status, third parties would be likely to replace a portion of the lost revenue with payments for default status from competing search engines or perhaps, as explained below, unconditional revenue sharing offered by Google. Moreover, it is far from clear that a business whose survival depends on revenues from illegal conduct is one

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[243] As noted above, out-of-market benefits are generally not taken into account in assessing the lawfulness of the defendant's conduct. *See supra* Section III.B.4. However, it seems appropriate for courts to consider such benefits in a remedy to restore competition, *see generally* eBay v. MercExchange LLC, 547 U.S. 388 (2006) (selection of injunctive remedies is subject to general equitable principles, including consideration of the "public interest"); and courts have allowed out-of-market divestitures as a remedy to restore competition within the relevant market. *See, e.g.*, Chicago Bridge & Iron Co. N.V. v. FTC, 534 F.3d 410, 441 (5th Cir. 2008) (affirming divestiture of assets for building water tanks although the relevant product market was cryogenic tanks, because "because the water department provides a consistent revenue stream to" the relevant products"); Polypore Intern., Inc. v. FTC, 686 F.3d 1219, 1217 (11th Cir. 2012) (affirming divestiture of a plant outside of the relevant market because it helped a plant inside the relevant market expand its sales).

[244] In principle the court could conclude that the Firefox default is sufficiently narrow (in terms of the share of the market it covers) that it would not be illegal in isolation. In that case, termination of the illegal conduct would not require an injunction of the Firefox default.

whose underlying economic value warrants special treatment under the antitrust laws. And it is far from clear that antitrust policies are promoted by creating an unlevel playing field that favors, for example, some browsers over others.

We have no view as to the optimal duration of a remedy intended to terminate the illegal conduct. Five to ten years is common in antitrust decrees.[245] In principle, the prohibition should be long enough to terminate the illegal conduct and reset the market, but not longer than necessary to promote competition in the relevant market or so long that the prohibition would jeopardize procompetitive benefits that might be provided by changes in market circumstances.[246]

2. *Preventing Circumvention of the Termination of Illegal Conduct*

An antitrust remedy that prohibited the precise conduct found to be unlawful but permitted other, substantially equivalent conduct would be ineffective and insufficient. It has thus long been clear that an antitrust remedy may prohibit different types of conduct that might perpetuate the anticompetitive effects of the conduct found to be illegal. The Supreme Court explained the rationale for broader remedies nearly seventy years ago:

> The District Court is not obliged to assume, contrary to common experience, that a violator of the antitrust laws will relinquish the fruits of his violation more completely than the court requires him to do. . . . When the purpose to restrain trade appears from a clear violation of law, it is not necessary that all the untraveled roads to that end be left open and that only the worn one be closed.[247]

A remedy to terminate the unlawful conduct should therefore prohibit both the specific restrictions found to be unlawful and alternative agreements (or unilateral conduct) that would have substantially the same foreclosure effects as the unlawful agreements, unless those alternative agreements can be justified by cognizable efficiencies not provided by the unlawful agreements. Thus, for example, Google should be prohibited from entering into broad but nonexclusive default agreements to the extent that they would

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[245] *See* Gregory J. Werden, *Remedies for Exclusionary Conduct Should Protect and Preserve the Competitive Process*, 76 ANTITRUST L.J. 65, 78 (2009).

[246] *Id.* at 77 (quoting RICHARD A. EPSTEIN, ANTITRUST CONSENT DECREES IN THEORY AND PRACTICE 115 (2007) ("shifts in technology and market conditions easily could undercut the wisdom of the initial arrangements," so Section 2 "decrees will generally make less sense ten years after they are entered than at the time they were first put into place").

[247] *Int'l Salt Co.*, 332 U.S. at 400.

foreclose rivals to substantially the same extent as the exclusive agreements that the court found illegal.

In its remedy decision, the district court permitted Google to continue paying for and enter into nonexclusive default agreements without otherwise limiting how broad the resulting defaults can be.[248] Thus, nothing in the decision would seem to prevent Google from paying browsers to be the default option for, say, 95% of their users. But such agreements would generate largely the same amount of foreclosure as Google's exclusive default agreements. The court explained its decision in part by noting that payments for default are "more palatable now than when the liability phase concluded" because of industry investment in Gen AI products that pose a "threat to the primacy of traditional internet search."[249] The court did not, however, point to any evidence that AI products had allayed (or would in the near future allay) the antitrust concerns surrounding search engine defaults.

While it is not our objective to evaluate the district court's decision, we think it is important to highlight some problematic (in our view) aspects of this part of the decision because they raise important substantive issues. Both our economic analysis and much of the court's discussion in the liability opinion suggest that the breadth of the defaults (which determine the share of the market foreclosed) is critical to the economic impact of default agreements and that default agreements with a substantial foreclosure share are likely to be anticompetitive regardless of whether the agreements are entirely exclusive. This has two implications. First, the remedies intended to terminate illegal conduct should have included a ceiling on the permitted aggregate foreclosure share of Google's default agreements.[250] Second, there appears to be a tension between the liability and remedy decisions that might call the former into question.[251]

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[248] 803 F. Supp. 3d at 128. The court did limit the duration of the default agreements to one year, but it did not prohibit Google from renewing them each year.

[249] *Id.* at 127.

[250] This could be achieved in various way. One possibility would be simply to cap the aggregate breadth of Google's deals in terms of the share of search queries they cover. Alternatively, an injunction could impose limits on the breadth of individual contracts, such as by stipulating that Google's deals cannot require any third-party access point to make Google the default for more than (say) 50% of its users. The remedy could of course be modified in the future if, for example, new evidence shows that AI-based competition has rendered Google's contracts no longer harmful.

[251] If the court's remedy decision is interpreted to mean that nonexclusive defaults are not anticompetitive and would not have been anticompetitive during the relevant period for liability, even if they are very broad in scope, then it becomes harder to argue that exclusive defaults are "reasonably capable of contributing significantly" to

Additionally, the court expressed concern that a prohibition on payments by Google would have adverse impacts on OEMs, carriers and browser developers and harm competition among them.[252] In its liability decision, however, the court rejected those arguments, in part because the "evidence is thin."[253] We explained above why this kind of equitable concern, even if factually supported (which is hardly clear)[254] and appropriate for discretionary restorative remedies, seems like an inadequate basis for permitting conduct that is likely to be illegal.[255]

Google should also be prohibited from coercing counterparties to make its search engine the default to the extent that a default agreement would be prohibited, even if Google does so without actually entering into agreements with the counterparties. One can imagine, for example, Google threatening to deny OEM's access to other Google services (e.g. the Google Play Store) unless they preinstall Chrome and a Google Search widget.[256] Such conduct, while technically unilateral, would closely emulate the effects of Google's unlawful contracts with OEMs.

More difficult is the question of whether the remedy should prohibit conduct that neither coerces third parties nor entails a default agreement but is likely to induce third parties to choose Google search as the default for reasons other than the quality of the search product. The most likely example of such conduct would be unconditional revenue sharing, which we discussed earlier.[257]

There are two arguments for prohibiting unconditional revenue sharing as part of terminating the unlawful conduct. First, as explained above, unconditional revenue sharing by Google would give browsers, OEMs, and carriers a strong incentive to make Google search the default; would

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monopoly. Broad but nonexclusive defaults can generate substantially the same degree of foreclosure as exclusive defaults, so it is hard to see how the latter could unlawfully preserve Google's monopoly if the former is competitively benign.

[252] *Id.* at 121, 123–27

[253] *Google*, 747 F. Supp. 3d at 254.

[254] As we explained earlier, some of these claimed efficiencies are unlikely to confer significant benefits, and none of them is likely to justify very broad defaults, although they might justify narrower ones. *See supra* Section III.B.

[255] *See supra* Section III.B.4.

[256] *See, e.g.*, Lorain Journal Co. v. United States, 342 U.S. 143 (1951) (defendant newspaper violated Section 2 by refusing to deal with advertisers that also advertised on a competing radio station); United States v. Dentsply Internation, Inc., 399 F.3d 181 (3d Cir. 2005) (defendant unlawfully maintained its monopoly by threatening to refuse to deal with dealers that distributed products of defendant's competitors).

[257] *See supra* Section II.C.2.

presumably be intended to have that effect; and would be likely to result in Google search retaining a large default position. A prohibition on Google's offering unconditional revenue sharing might therefore be seen as a simple corollary of a prohibition on the default agreements themselves.[258]

However, there are important differences between default agreements and unconditional revenue payments, in addition to the differences between the incentives they would likely provide for making Google the default.[259] For one thing, unconditional revenue sharing is not a "restraint"—it does not impose any restrictions on what trading partners are allowed to do. It is more akin to a unilateral investment. As a result, its effect on rivals is likely to be different from that of exclusive default agreements. With unconditional revenue payments, browsers, OEMs, and carriers would be free to make other search engines the default on some or all of their access points. They might do so in response to payment offers by the competitors or to promote increased search engine competition, from which they are likely to benefit. Google seemed to think this was a serious risk because it repeatedly refused to offer any revenue share payments, or offered only much smaller payments, to counterparties that sought to relax Google's requirement of exclusive default status in order to work with smaller rivals on a limited basis.

In addition, the default agreements include an explicit requirement that Google be made the default search engine, and that requirement directly excludes competing search engines. By contrast, unconditional revenue sharing simply shares with the counterparties search revenues obtained by Google that are jointly created by the combination of the access point and Google search. Those revenues reflect in large part the perceived quality of Google search, and the sharing of those revenues both rewards the counterparties for their contribution to those search revenues and gives the counterparties an added incentive to invest in the access points and perhaps increase the ability of the access points to facilitate search services. While the prospect of such revenue sharing would give the counterparties an incentive to make Google the default on some or all of their access points, the counterparties would not be required to do so. A counterparty would respond to an offer of unconditional revenue sharing by making Google the default only if and to the extent the incremental revenues it gains by making Google the default, together with the value of whatever user goodwill it gains by making Google the default, exceeds the value to it of making a different search engine the default or providing a choice screen instead. Unconditional

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[258] *See* Salop, *supra* note 114. If the remedy permitted default agreements up to a certain maximum share of search access points or queries, a prohibition on unconditional revenue sharing would presumably permit revenue sharing, or perhaps a combination of revenue sharing and default agreements, to the same extent.

[259] These differences are discussed *supra* Section II.C.2.i.

revenue sharing might be thought to be little more than ordinary, unobjectionable competition for valuable distribution services.

The second argument is that, even if unconditional revenue sharing might ordinarily be unobjectionable, it can be anticompetitive when used by a monopolist like Google. Google has more than a 90% share of the relevant search market, and it has the ability and incentive to offer larger payments to access points than those its competitors can offer, in part because of the monopoly rents Google gains by reason of its dominant market position. Google thus has an advantage that tilts the outcome of the competition in its favor. In principle, the antitrust concerns could be ameliorated by limiting the scope of Google's revenue sharing deals, analogous to limiting the scope of default contracts. For example, the court might specify that Google can make revenue sharing payments to only a designated share of search access points or search queries. However, this could be administratively complex. Alternatively, that problem might be ameliorated by a court-imposed ceiling on the size of the revenue sharing payments Google could offer, but courts are ill-equipped to engage in that kind of price regulation.

The ability and incentive of monopolists to maintain their dominance by unilaterally outspending rivals—for example, by investing more in securing valuable IP rights or paying more to purchase other valuable inputs— has long been understood.[260] But if the monopolist's outsized spending is nonpredatory—that is, if the inputs provide efficiency benefits for the monopolist that exceed their cost—buying those inputs would be a sensible business strategy even if it did not adversely affect rivals. Antitrust law generally regards such conduct as lawful. This is so even if rivals' inability to match the monopolists' spending impairs their ability to remain competitive.

To the extent that unconditional revenue payments induce counterparties to make Google search the default or deter counterparties from making competing search engines the default, they divert revenues and data away from those competing search engines. Restricting such payments would thus be likely to increase the revenues and data available to those competitors. Therefore, a ban or restriction on unconditional revenue sharing might be justified as a remedy for restoring competition. But unconditional revenue sharing has never been found to be unlawful, and it is unlikely that it would be found to be unlawful if that issue were litigated. For that reason, and because unconditional revenue sharing is very different from the default agreements, it should not be banned as part of a remedy intended to terminate the conduct that has been found to be illegal.

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[260] *See* Gilbert & Newbery, *supra* note 89.

C. RESTORING COMPETITION

1. *Restorative Remedies and Proof of Harm*

Remedies intended to restore competition lost or harmed by the illegal conduct must be rooted in an understanding of precisely what harm was caused by that conduct. As we explained above, the District Court did not find that Google would have lost its search monopoly absent the illegal default agreements or even that the structure of the search market would have been materially different.[261] Therefore, remedies designed to terminate Google's monopoly directly are inappropriate in this case, assuming the correctness of the court's findings.

The court found that the default agreements foreclosed rivals from the most attractive means of distribution[262] and thereby diminished rivals' share of search queries and data needed for quality improvement[263] and decreased incentives for investment in and innovation by Google's rivals and potential entrants.[264] The court concluded that, because the agreements caused those harms to competition, they were "reasonably capable" of contributing significantly to perpetuating Google's monopoly and therefore illegal.[265] The restorative remedies should be thus designed to replace rivals' lost data and revenue opportunities or otherwise to enable them to become the more effective competitors they might have been absent the illegal agreements.

In its remedy decision, relying heavily on language from the earlier *Microsoft* decision and its progeny, the district court held that the "severity of the remedy" must be commensurate with "the evidence of the causal connection" between the unlawful conduct and Google's dominant position.[266] While the language of the cited cases and of the district court itself is not entirely clear, we think the best interpretation is that restorative remedies are appropriate to repair the specific anticompetitive effects that the court found to have actually occurred as a result of the conduct. But extreme remedies designed to dismantle the defendant's monopoly are inappropriate if the court found only that the misconduct was "reasonably capable" of contributing to that monopoly.[267]

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[261] *Supra* Sections III.A.2–3.

[262] *Google*, 747 F. Supp. 3d at 216–26.

[263] *Id.* at 227–29.

[264] *Id.* at 236–38.

[265] *Google*, 747 F. Supp. 3d at 216.

[266] *Google,* 803 F. Supp. 3d at 73 (quoting New York v. Microsoft Corp., 224 F. Supp. 2d 76, 148 (D.D.C. 2002)). *See generally* 803 F. Supp. 3d at 63–74,

[267] Some language in the court's opinion could be read to suggest a kind of sliding scale or balancing by which the strength of the remedy might depend upon the strength

In our view, therefore, the court correctly rejected both Google's argument that no restorative remedies are available when liability is based on a finding that conduct was "reasonably capable" of maintaining its monopoly and the government's argument that liability imposed on that basis is sufficient for a remedy that would perforce terminate Google's monopoly.[268]

There is thus no predicate for a remedy going beyond the proven harms. It is possible that, although Google's defaults are anticompetitive, its dominance is driven primarily through lawful competition on the merits. Thus, remedies that go far beyond eliminating the proven anticompetitive effects risk harming the public by handicapping a high-quality producer.

2. *Breakup*

The most aggressive remedy considered in the Google Search case is a breakup. The Justice Department proposed that Google be forced to divest its Chrome browser.[269] It also sought a "contingent" divesture of Android, which would be triggered if other elements of the remedy order prove ineffective in restoring competition in search.[270]

There is nothing inherently inappropriate with the Justice Department's request for a breakup in a case involving exclusionary conduct. A restorative remedy is intended to undo the harm caused by the illegal conduct, not just to stop or reverse the unlawful conduct itself; and courts are permitted to use any reasonable means to undo the harm.[271]

But, for several reasons, a breakup is unwarranted in this case. First, as explained above, the court did not find that, absent the illegal conduct, Google's market share or monopoly power would have been materially less than they are. Instead, the court found that the illegal conduct diverted revenues and data from rival search engines and thus impaired their ability to improve their products and reduced their incentives to invest and innovate.

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of the evidence of causation. *E.g.*, 803 F. Supp. 3d at 77 (the court should "assess the strength of the causation evidence"). But it is unlikely that the court intended to suggest such balancing. The court did not find that the government almost proved that Google would have lost its monopoly absent the illegal agreements or barely proved that the agreements harmed rivals. It is more likely that the court intended simply that the remedy should depend on the harm that the evidence was sufficient to prove.

[268] *Id.* at 74–75.

[269] Plaintiffs' Revised Proposed Final Judgment, United States v. Google LLC, Nos. 1:20-cv-3010, 1:20-cv-3715 (D.D.C. Mar. 7, 2025) (No. 1184-1) at 12.

[270] *Id.* at 14.

[271] National Soc'y of Prof. Engineers v. United States, 435 U.S. 679, 698 (1978) (courts can prescribe any "reasonable method of eliminating the consequences of the illegal conduct.")

The requested divestiture remedies are not well suited to undo these harms. Second, as we explain below, economic and administrative considerations counsel against a breakup here.

A Chrome divestiture could help to stimulate search competition only to the extent that it would eliminate Google's default position on Chrome.[272] But this could be accomplished through behavioral remedies, making a breakup unnecessary.[273] For example, the court could order Google to offer a choice screen on Chrome. Google has already been forced to implement a choice screen in several foreign jurisdictions, including the European Union, which suggests such a remedy would be administrable.

The proposed breakup also carries significant risks. Divesting a product eliminates synergies between that product and the rest of the defendant's business. This risk is especially acute when, as here, the divested product was developed internally, rather than being acquired. The court found that Chrome "does not run as a standalone business," "depends on Google for a host of administrative functions," and "is deeply reliant on Google's 'hyperscale' technical systems and infrastructure."[274] A forced divestiture of Chrome would end these synergies, and there is no guarantee that those lost efficiencies will be replaced within the acquiring firm.

For these reasons, it is not uncommon for divestitures to fail, with the divested unit becoming significantly weaker or even going bankrupt.[275] In such cases, the divestiture is a lose-lose proposition: it destroys substantial economic value while also failing to create any new competitive pressure.

Accordingly, if it is possible to restore competition using less intrusive remedies that pose a smaller risk of collateral damage, those alternatives should be prioritized. In the *Google Search* case, the Justice Department identified a wide range of behavioral remedies that would help to stimulate search competition.[276] This suggests that a major divestiture is not merely a risk—it is an unnecessary risk.

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[272] Divestiture might not accomplish this. The firm that acquires Chrome might opt to make Google Search the default on Chrome, unless the remedy included a requirement that the buyer of Chrome agree not to make Google Search the default. That requirement would do no more than a similar prohibition imposed on Google without the divestiture, and it would reduce the value of Chrome to the buyer.

[273] We discuss such remedies *infra* Section IV.C.4.

[274] 803 F. Supp. 3d at 116–17.

[275] *See, e.g.*, Daniel Hosken, Frank Pinter, & Devesh Raval, *How Does Consumer Voice Respond to Antitrust Policies? Evidence from Supermarket Divestitures*, (unpublished manuscript) (discussing some examples of failed antitrust divestitures).

[276] We discuss these remedies *infra* Section IV.C.3.

The foregoing discussion contemplates a breakup as a competition-restoring remedy, but in principle a breakup could be used to terminate a defendant's unlawful behavior. In some cases, breakups are used to extinguish illegal conduct that would be difficult for a court to detect and police using nonstructural remedies. A famous example is *United States v. AT&T*, which culminated in one of the largest breakups in antitrust history.[277]

However, the Google Search case does not fit this pattern. First, there is little connection between the proposed Chrome divestiture and Google's illegal conduct. That conduct involved default agreements with other browsers, Android OEMs, and carriers. The court did not find (and the Justice Department did not allege) that Google's default status on Chrome was unlawful.

The Justice Department seems to argue that divestiture of Android might be necessary to terminate some of Google's illegal conduct. It warns that, even if Google is barred from paying Android OEMs to preinstall Chrome, it could simply threaten to deny them access to its Play Store unless Chrome is preinstalled. But this hypothetical conduct—which is essentially a tying arrangement—could be prevented by an injunction.[278] In almost all cases of unlawful tying, the remedy chosen by the court is an injunction, not a breakup.

Finally, any potential buyer of Chrome or Android is likely to be another large tech company that wants to use the divested product to help bolster its own complementary technologies. This creates a risk of unintended consequences that could undermine the Justice Department's rationale for a divestiture. For example, an OpenAI executive testified at the trial that OpenAI might be interested in acquiring Chrome to help advance its own search-related AI technology.[279] If such an acquisition would give OpenAI—already a market leader in generative AI—an advantage over competing search-related AI technologies, it might be in tension with the Justice

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[277] *United States v. AT&T Co.*, 552 F. Supp. 131 (D.D.C. 1982). In that case, AT&T had local telephone monopolies in many areas and operated a long-distance (national) telephone network. It impaired competition in the long-distance market by refusing to let long-distance rivals interconnect with its local networks. Even without expressly refusing such interconnection, there are many ways AT&T could exploit its local exchanges to frustrate long-distance rivals that would be difficult to observe and prohibit by injunctive remedies. And, if AT&T had remained integrated across local and national markets, it would have retained its incentive to do so.

[278] The district court included a prohibition on such conduct in its remedy.

[279] Jody Godoy, *OpenAI Would Buy Google's Chrome, Exec Testifies at Trial*, REUTERS (Apr. 22, 2025).

Department's objective of "prevent[ing] Google from using Chrome as a tool to unfairly advantage its search product."[280]

3. *Compulsory Dealing Remedies*

The Justice Department proposed a range of behavioral remedies that involve some form of compulsory dealing with rivals. These remedies are intended to strengthen rivals (and, by extension, competition) by giving them temporary access to Google's data, technology, or other resources. We will not attempt to discuss all of these remedies in detail but rather will emphasize a few general principles and discuss what they imply for some of the specific remedies that were proposed.

a. *Trinko* Does Not Control the Availability of Compulsory Dealing Remedies

As a preliminary matter, we note that, contrary to Google's suggestions,[281] the Supreme Court's *Trinko* decision[282] does not control whether these remedies can be granted. *Trinko* concerns antitrust liability for a unilateral refusal to deal (RTD) with rivals; it does not address the availability of remedies that compel dealing, particularly when the antecedent antitrust violation is not an RTD.[283] However, two important policy concerns underlying the *Trinko* decision are relevant when considering compulsory dealing remedies: maintaining incentives for investment, and ensuring antitrust interventions are reasonably administrable. We discuss these below.

b. Incentives for Investment

The most important concern associated with RTD liability—that it will chill investment in valuable new technologies—is significantly less acute when compulsory dealing is merely a remedy designed to restore competition after a defendant's violation. As the *Trinko* Court noted,[284] if all successful firms were forced to share their technology with smaller rivals, there would be much less incentive to develop valuable technologies in the first place. But the use of compulsory dealing as a remedy does not have that effect. It allows firms to keep their technology to themselves, so long as they do not break the

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[280] *Google,* 803 F. Supp. 3d at 112.

[281] *Id.* at 180, n.26.

[282] Verizon Commc'ns Inc. v. Law Offices of Curtis V. Trinko, LLP, 540 U.S. 398 (2004).

[283] The Supreme Court had ordered compulsory dealing as a remedy in a case decided before *Trinko*. *See* Ford Motor Co. v. United States, 405 U.S. 562, 575 (1972) (requiring Ford to purchase half of its requirements for spark plugs from the divested entity).

[284] *Id.*

law in other ways. Compulsory dealing remedies thus affect the investment incentives of only those firms that are engaged in (or are considering) anticompetitive conduct and only investments in assets that the firms are likely to be required to share as a result of their unlawful conduct. The prospect of a compulsory sharing remedy could serve a valuable deterrence function by reducing the profitability of antitrust violations.

Any remedy that stimulates competition will necessarily reduce the defendant's profits and thereby diminish the returns it earns on its prior investments. To the extent that the remedy reduces supracompetitive profits attributable to illegal conduct, it is likely to improve overall investment incentives both by reducing incentives to invest in unlawful conduct and by remedying harm to investment incentives of actual and potential rivals caused by illegal conduct.

While there should thus be no concern that the prospect of a compulsory dealing remedy will deter procompetitive investments in general, any such remedy should be designed so that the firms (both defendant and, perhaps more important, the defendant's rivals) retain adequate incentives for investment while the remedies are in effect and beyond. While a compulsory dealing remedy is in effect, the defendant will have a diminished incentive to invest in any technologies that it will be required to share with rivals. However, this effect is a temporary byproduct of a remedy intended to increase the investment incentives of other firms and thus to increase competition in the future.[285]

The biggest worry is that, if the remedies are not carefully designed, rivals will simply free ride on the defendant rather than building up their own independent technology. If that happens, the increased competitive significance of the rivals might not persist after the remedy expires. A compulsory dealing remedy should thus be designed in a way that will help rivals improve their own technology and encourage them to grow into independent competitors.

These points are relevant to a number of the remedies requested in the Google Search case. Consider the proposed syndication of search results, which would require Google to give rivals (at a price no greater than marginal cost) not only its ranked search results for a given query, but also all other content on the search page, including maps, video, images, and the knowledge

[285] After the remedy expires, the defendant will once again be the sole beneficiary of any new investments it makes, eliminating any chilling effect of the remedy.

panel.[286] According to the Justice Department, this remedy should give rivals everything they need to make the search experience "the same as if the [rival's] query had been submitted through Google.com."

Syndication of search results could be an appropriate short-term remedy while rivals build up the technologies they need to generate high-quality results independently, but the remedy proposed by the Justice Department is too broad in that it requires not only Google's search results but also all the other content on the search page.[287] The latter content, which appears alongside the search results, is a key medium by which search engines differentiate themselves from one another. Ultimately, if rivals are to succeed over the long run, they will have to develop their own creative ideas for what peripheral content to include on the search page. Google does not have a monopoly on this content, as much of it can be provided by third parties.[288].

The district court limited the syndication remedy in ways that are likely to promote desirable incentives. First, it held that rivals can rely on Google for only 40% of search queries, and that this percentage cap would decrease annually over the remedy's five-year term.[289] Evidence suggested that rivals are already capable of generating good results for about 80% of queries and are deficient only in the toughest 20% of queries. If that is correct, the limited syndication remedy will give rivals what they need to close the quality gap with Google while still ensuring that they must rely primarily on their own results. Second, the court declined to compel syndication at marginal cost.[290] The requested marginal cost requirement is potentially problematic because rivals would have little incentive to produce an input internally if they can acquire it from an external supplier at marginal cost.[291]

Similarly, the district court limited the index sharing remedy by making it a one-off data transfer rather than an ongoing obligation.[292] An index is essentially an annotated map of the entire internet. There is an immense initial cost of creating this map. Limiting index sharing to a one-time transfer means rivals get access to Google's index as it presently exists, but they must take

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[286] United States v. Google LLC, 803 F. Supp. 3d 18, 168–69 (D.D.C. 2025). The Justice Department also requested sharing of relevant data used to generate these features. *Id.*

[287] This includes, for example, maps, images, and knowledge panels that often appear on the search page. *See id.* at 168–69.

[288] *Id.* at 172.

[289] *Id.* at 176.

[290] *Id.* at 174.

[291] This overstates the point to some extent. The fact that the remedy will last only a few years would presumably give rivals an incentive to invest in alternatives to the shared asset in anticipation of the termination of the remedy.

[292] *Id.* at 146.

the necessary steps to update it over time to be effective competitors in the future. This limitation also helps to protect Google's incentives for investment because Google will be the sole beneficiary of any investments it makes to improve its index.

c. Administrability

Antitrust is not regulation. Courts are not well-equipped to set the terms of complex business transactions or to conduct ongoing oversight to ensure firms' compliance with those terms. But administrability concerns do not support any general rule against compulsory dealing remedies, which should instead be considered on a case-by-case basis.

First, compulsory dealing does not always raise significant administrative challenges. Most notably, if the defendant already sells the relevant technology to third parties under comparable circumstances, then a court need not devise the terms of trade on its own. It can just order the defendant to sell the technology to rivals on the same terms it offers to third parties.[293] The court limited its search result syndication remedy to match the terms of Google's voluntary syndication deals.[294]

Second, unlike refusal-to-deal liability, which may as a practical matter compel dealing on a permanent basis,[295] a compulsory dealing remedy is temporary. The difficulty of stipulating the price of dealing is much less worrisome if the relevant dealings will last only a few years. The purpose of the remedy is to facilitate a temporary exchange to strengthen rivals, not to regulate prices over the long run. So long as the price is not prohibitively high, it does not matter very much if the temporary remedy price deviates from the efficient regulatory price (often taken to be average cost).

The court's decision to require Google to share its index at marginal cost seems reasonable, given that there were no voluntary index-sharing transactions that could be used as a benchmark.[296] The compensation will cover the additional costs Google incurs to share the index and should be relatively easy to administer, and because the remedy requires only a one-

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[293] MetroNet Servs. Corp. v. Qwest Corp., 383 F.3d 1124, 1133 (9th Cir. 2004) ("If the defendant already sells the product . . . to certain customers but merely refuses to sell to its competitors . . . , [t]he court can simply order the defendant to deal with its competitors on the same terms that it already deals with others . . . .")

[294] *Google*, 803 F. Supp. at 173–74.

[295] For example, if there had been antitrust liability in *Trinko*, then Verizon could be sued again anytime it failed to deal with rivals on reasonable terms.

[296] *Google*, 803 F. Supp. at 147–48.

time data transfer, the modest compensation will not diminish the incentive of either Google or its competitors to invest in the future.

Finally, compulsory dealing remedies are hardly unique in their potential to raise administrability challenges. Complicated injunctions and structural remedies also routinely create significant practical challenges.[297] In some cases, compulsory dealing will provide the best balance of efficacy and administrability; in other cases, it will not. The choice should be made based on case-specific considerations, not sweeping generalizations.

d. Evidentiary Basis for the Remedies

For a compulsory dealing remedy to be appropriate, a simple but important requirement is that there is some clear evidentiary basis for thinking it will help to restore the lost competition in the relevant market. Sharing of user data (the data that drives scale effects) is perhaps the most well-supported remedy proposed by the Justice Department. In its liability decision, the court found that Google's default agreements impaired competition in part because depriving rivals of scale and data reduced their quality. The implication of this finding—that rivals would be more competitive if they had more data—creates a clear basis for employing data sharing as a restorative remedy.[298]

This does not mean that a compulsory dealing remedy can be appropriate only if it involves sharing a resource from which rivals were wrongfully foreclosed. For example, Google's conduct did not deprive rivals of index data, and yet there seem to be good reasons for thinking that an index sharing remedy could help to stimulate competition by compensating for the diminished opportunities rivals had to improve the quality of their products because of the illegal agreements.[299]

Compare these examples with the Justice Department's request that Google be compelled to share the data it uses to train Gemeni, its generative AI (GenAI) model. As the district court noted, "the evidence did not show … that [Gemeni's] responses are superior to other GenAI offerings due to Google's access to more user-interaction data. If anything, the evidence

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[297] The district court noted that the structural remedies sought by the Justice Department would be "incredibly messy." *Id.* at 116.

[298] It is also supported by recent economic research. *See, e.g.*, Andrei Hagiu & Julian Wright, *Data-Enabled Learning, Network Effects, and Competitive Advantage,* 54 RAND J. Econ 633 (2023) (finding that data sharing can stimulate competition due to "data-enabled learning," *i.e.*, scale effects).

[299] Building an index is extremely expensive and is thus a meaningful barrier to entry in search. Reducing barriers to entry generally promotes competition and is a suitable remedy for illegal conduct that increased barriers to new entrants and obstacles to quality improvement by existing rivals.

established otherwise."[300] Thus, even if it would be appropriate to include restorative remedies directed at AI-based search options (a possibility we evaluate below), it is not clear that this particular form of data-sharing would help to stimulate competition that was harmed by the illegal conduct.

e. GenAI Rivals

In *Google*, the district court held that GenAI firms should be entitled to participate in the compulsory dealing remedies. The court viewed the rapidly expanding GenAI industry as a source of competition that is likely to become increasingly relevant in the future. Some GenAI products—mainly LLM chatbots like ChatGPT, Claude, and Gemini—have web search capabilities that can substitute for traditional search engines, at least for some types of queries.[301]

There are two possible objections to including rival GenAI products as beneficiaries of the data sharing remedies. First, one might object, as Google did, that it is inappropriate for the court's remedies to reach GenAI products that fall outside the relevant market.[302] But these firms could stimulate competition in the relevant market even if they are not participants in that market. When defining markets, courts routinely exclude products that are only partially or mildly substitutable with the products in, or that are merely potential entrants into, the relevant market.[303] These excluded products do not compete with the included products as intensely as the included products compete with each other, but remedies that aid them might increase competitive constraints on dominant firms in the relevant market.

Therefore, the key question is whether permitting GenAI rivals to participate in the data sharing remedies would materially stimulate competition in the relevant search market. If the answer is yes, then including these rivals in the remedy is consistent with the court's goal of restoring competition in search. However, it is conceivable that Google's data would merely enable GenAI rivals to be more effective competitors in some other market—perhaps the market for LLM chatbots like ChatGPT and Gemeni—without materially affecting competition in the search market. In that case, there would seem to be little justification for including these GenAI rivals in

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[300] 803 F. Supp. 3d at 156.

[301] *Id.* at 99–100 (noting that "GenAI chatbots grounded in general search perform an information-retrieval function that is similar to GSEs" but acknowledging that "their functionality only partially overlaps").

[302] *Id.* at 101.

[303] For example, a court might define a relevant market for electric cars, even though many consumers view hybrid cars as substitutable to some extent.

the data-sharing remedy, as it would not advance the court's goal of restoring competition in search and might distort competition in other markets.

Second, one might object that it is inappropriate to include GenAI rivals as beneficiaries of the data sharing remedy if they were not harmed by Google's defaults. At present, GenAI chatbots like ChatGPT are not distributed through the same channels as search engines. Most notably, they do not rely on browser defaults because consumers do not access AI chatbots through a browser's search bar.[304] That suggests that, unlike rival search engines, GenAI rivals were not injured by the fact that Google's broad defaults prevented them from obtaining browser default privileges for themselves.

This argument implicitly assumes a private law objective of rectifying harms to rivals. But, just as antitrust liability is concerned with competition and not individual competitors, so too are antitrust remedies. The purpose of the data-sharing remedy is to restore competition in search, not to make rivals whole.[305] If including GenAI rivals in the remedy would meaningfully contribute to that restorative objective, then including those rivals in data sharing remedies would not necessarily be inappropriate. However, it could be inappropriate if it would cause significant economic harm outside the search market, such as distorting competition or innovation in the market for Gen AI Chatbots, particularly if this harm would plausibly outweigh any benefits to competition in the relevant market.

4. *The Chrome Default*

Google Chrome is a leading browser. As a result, a large chunk of Google's overall default share is independent of its contracts and stems instead from Google's self-implemented Chrome default.[306] Because this unilateral default was not found to be illegal (the Justice Department did not even allege that), eliminating the Chrome default would not be an appropriate termination remedy. But it might be an appropriate restorative remedy.

There are two possible ways a court might eliminate the Google default on Chrome, but both have meaningful downsides. One would be for Chrome to default to rival search engines. This could help significantly to stimulate

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[304] Instead, consumers either navigate to a GenAI product's own website or use a dedicated app.

[305] Damage and injunctive remedies in private enforcement actions are intended in part to make injured parties whole.

[306] Specifically, Google's default on user-downloaded Chrome accounts for 20% of search queries, while Google's contracts account for an additional 50%. United States v. Google LLC, 747 F. Supp. 3d 1, 217 (D.D.C. 2024).

competition. However, this would likely raise administrative challenges, as there would have to be some system for allocating the default position to rivals. And this could require a degree of oversight of Google's browser design and management that a court is ill-equipped to provide.

A second possibility would be to require Google to implement a choice screen on Chrome. This would likely be less challenging from an administrative perspective. Google has already implemented a choice screen on Android devices in several foreign jurisdictions. The downside, however, is that replacing Google's Chrome default with a choice screen would likely have a much smaller competition-restoring effect than changing the default to favor rival search engines, at least in the short run.[307]

Additionally, users who download Chrome are probably more likely to prefer Google Search than the average user. There is a degree of brand-loyalty that extends between complementary products.[308] This suggests that Google's Chrome default is likely less consequential (in terms of affecting consumer choice) than its paid defaults, as many Chrome users are Google brand loyalists who are probably going to use Google Search even if it is not the default.

Reasonable minds could differ on whether eliminating Google's Chrome default is worthwhile. Either way, the court's compulsory dealing remedies are likely to be the most consequential competition-restoring aspects of its remedy decision.

CONCLUSION

Search defaults create switching costs for users that would prefer a different search engine and thus have the effect of diverting search queries from other search engines and to the default search engine. Search queries give search engines data that can be used to improve the quality of the search engines and opportunities to sell advertising and gain revenues that can fund search engine improvement.

Defaults for relatively small or new search engines can promote competition by increasing the search engines' access to data and revenues and by enhancing their access to new users. But defaults for dominant search engines that cover a large share of the market can impair competition and reduce consumer welfare by handicapping smaller and potential new rivals. And, while even some defaults favoring dominant firms may have

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[307] *See supra* text at notes 18–30, explaining the effects of choice screens.

[308] This district court highlighted this kind of brand loyalty in its liability decision. *See Google,* 747 F. Supp. 3d at 33.

procompetitive justifications, none of those justifications requires the firm to obtain such broad defaults that rivals are almost entirely cut off from the default distribution channel.

The district court in *Google* found that Google's default agreements have a number of anticompetitive effects.[309] They substantially foreclose rivals; undermine competitive entry by depriving rivals of scale; and diminish incentives for investment. Independent economic research supports the likelihood of anticompetitive effects. The court did not find definitive evidence that Google would have been less dominant or that there would be stronger competitors in the market but for Google's anticompetitive conduct. But Google's agreements harmed rivals and "reasonably appear capable of significantly contributing to be "reasonably capable of contributing significantly to maintaining Google's monopoly power," which is sufficient to support monopolization liability under *Microsoft*.[310]

Equitable antitrust remedies should terminate, and prevent the recurrence of, the illegal conduct and restore competition. Such a remedy in the Google Search case should prohibit Google's entering into default agreements that apply to a large share of search access points. The district court's order seems insufficient for this purpose.

The district court correctly focused on remedies intended to make rival search engines more effective competitors and enable them to be the kinds of competitors they would have been absent the illegal agreements. Because the court did not find that Google would have lost its search monopoly absent the illegal default agreements or even that the structure of the search market would have been materially different, it correctly rejected divestiture and other remedies designed to eliminate Google's monopoly.

The analysis described in this article is focused exclusively on search engines, but it could also be useful in other cases. The methodology used in the economic analysis could be useful in cases involving other impediments to the ability of rivals to obtain valuable inputs, especially if those inputs are subject to important scale effects. And the legal analysis is relevant as a general matter to all monopoly maintenance cases and to matters involving antitrust remedies.

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[309] *Id.* at 153.

[310] *Id.* at 166 (quoting *Microsoft,* 253 F.3d at 71 and holding that Google's "agreements 'clearly have a significant effect in preserving [Google's] monopoly'").