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**The Economic Rationale of *United States v. Google***

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**Abstract**

In 2020, the Department of Justice (DOJ) filed an antitrust suit against Google alleging that Google has unlawfully monopolized the markets for general search services, search advertising, and general search text advertising. The complaint raises questions involving market definition, monopoly power, and monopolizing conduct. In this article, we examine these issues through the lens of microeconomic principles. Our analysis finds that there is a sound economic rationale for the DOJ's complaint.

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## I. Introduction

In 2020, the Department of Justice (DOJ) filed an antitrust suit against Google alleging a §2 Sherman Act violation.<sup>1</sup> There is no doubt that Google dominates the market for general search services, search advertising, and general search text advertising in the United States.<sup>2</sup> But “mere size” does not offend the Sherman Act.<sup>3</sup> Something more than dominance is required.

In this article, we analyze the Complaint through the *Grinnell* framework provided by the Supreme Court.<sup>4</sup> We focus on DOJ’s specific allegations and the proof that will be needed for the DOJ to prevail.<sup>5</sup> We also address the thorny issue of relief in the event that DOJ does prevail.

We begin by outlining the evidentiary hurdles contained in the Supreme Court’s opinion in *United States v. Grinnell Corp.*<sup>6</sup> Following that, we spell out the allegations in the Complaint. We then examine the alleged adverse consequences of Google’s monopoly in the general search services market. We then turn to a similar analysis in the digital search advertising market. In the event that DOJ prevails, the next problem is relief. As it turns out, it is complicated by elements of natural monopoly in the general search services market. Finally, we close the Article with some concluding remarks.

## II. Evidentiary Standards

According to the Complaint, Google has unlawfully monopolized three separate markets. To carry its burden of proof, the DOJ will have to satisfy the *Grinnell* test for unlawful monopolization:

“The offense of monopoly under §2 of the Sherman Act has two elements: (1) the possession of monopoly power in the relevant market and (2) the willful acquisition or maintenance of that power as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident.”<sup>7</sup>

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<sup>1</sup> *United States v. Google LLC* (2020). “Case Number: 1:20-cv-03010,” District Of Columbia District Court, Filed: 10/20/2020, hereinafter *Complaint*. DOJ filed a civil action rather than a criminal action. Since this decision was dictated by the DOJ’s legal strategy, we are unaware of their reasoning.

<sup>2</sup> *Id.*

<sup>3</sup> *United States v. United States Steel Co.*, 251 U.S. 417 (1920): “[...the law does not make mere size an offense, or the existence of unexercised power an offense. It, we repeat, requires overt acts....”]

<sup>4</sup> *United States v. Grinnell Corp.*, 384 U.S. 563 (1966).

<sup>5</sup> Much of Google’s monopolizing conduct involves vertical contracts that may be objectionable on §1 grounds. The DOJ has not alleged any §1 violations, so we focus on §2.

<sup>6</sup> *Id.*

<sup>7</sup> *United States v. Grinnell Corps.*, 384 U.S. 564, 570-71 (1966).

To prevail at trial, therefore, the DOJ will have to define the relevant antitrust market—both product and geographic markets—and prove that Google has monopoly power in those markets.

For antitrust purposes, the relevant product market includes all reasonably close substitutes. The idea is to include all products that significantly influence price. For example, one would probably find that Coca-Cola and Pepsi-Cola are reasonable substitutes but that milk and orange juice are not. The geographic market should include sources of supply that significantly influence price. For example, it is doubtful that ice cream cones from Boston are in the same market as ice cream cones from New York. In contrast, two ice cream shops located two blocks apart may be reasonably close substitute sources of supply. In practice, reasonable substitutability is determined by experience and judgement. Defining markets involves both art and science along with empirical evidence and experience with similar situations.

Monopoly power refers to a firm's ability to control price in the relevant antitrust market by adjusting the quantity supplied. The existence of monopoly power will be inferred when the firm in question has a market share of at least 70-75 percent when there are entry barriers. In the case of Google, DOJ argues that both elements are present.

If the evidence supports the allegation of monopoly power in the relevant market, the DOJ will have satisfied the first prong of the *Grinnell* test. It will have established the structural condition of monopoly, which is not necessarily a violation of §2 of the Sherman Act. Then the DOJ will have to prove that Google had attained or maintained its monopoly through competitively unreasonable conduct. If a firm attains a structural monopoly by building a better mousetrap and simply improves its product, it does not violate §2. But if it maintains its original lawful monopoly by exclusionary practices, it then runs afoul of §2 of the Sherman Act.<sup>8</sup>

### **III. Allegations in the Complaint**

In October 2020, the DOJ filed a Complaint against Google alleging that Google has monopoly power in the markets for general search services, search advertising, and general search text advertising. It also alleges that, for many years, Google has maintained and extended its monopolies in these markets through anticompetitive and exclusionary practices that violate Section 2 of the Sherman Act.

According to the Complaint, Google's monopoly power in the three aforementioned markets is reflected in its dominant position in these markets. Today Google dominates

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<sup>8</sup> Since DOJ has only alleged §2 violations, it need not prove that Google's vertical contracts violate §1. DOJ's focus need only be on their exclusionary potential for maintaining Google's monopoly.

the United States market for general search services with a market share of approximately 88 percent, followed by Bing with approximately 7 percent, Yahoo with less than 4 percent, and DuckDuckGo with less than 2 percent.<sup>9</sup> Google's dominance in this market has persisted for more than 10 years, holding a market share of more than 75 percent since 2009. Google's market share of the U.S. search advertising and U.S. general search text advertising markets exceeds 70 percent.

The DOJ asserts that Google has maintained and extended this monopoly power through exclusionary agreements with distributors (i.e., device manufacturers, major U.S. wireless carriers, and browser developers) and anticompetitive conduct to lock up distribution channels and block rivals. The exclusionary agreements allow Google to secure default status for its general search engine. In many cases, these agreements specifically prohibit Google's contract partners from dealing with Google's competitors, and/or require distributors to adopt a bundle of Google apps in which the search access points of those apps are preset to default to Google's search engine.

Google's exclusionary agreements cover almost 60 percent of the general search queries in the United States.<sup>10</sup> Between its exclusionary contracts and owned-and-operated properties (e.g., Google's browser, Chrome), Google effectively controls search distribution channels accounting for approximately 80 percent of all U.S. general search queries. This dominance in the general search market is monetized in the search advertising and general search text advertising markets. Google uses consumer search queries and consumer information to sell advertising. The advertising revenues are then shared with distributors in return for commitments to favor Google's search engine. The DOJ alleges that this scheme creates a strong disincentive for distributors to switch, and thereby raises barriers to entry. Google, therefore, forecloses competition for internet search: general search engine competitors are denied distribution, scale, and product recognition. By relying on exclusionary agreements to lock up scale for itself and deny it to others, Google unlawfully maintains its monopolies in the three identified markets. By foreclosing competition from rivals, Google harms consumers and advertisers.

The issue of how Google's agreements allegedly lock up distribution of search deserves further explanation. According to the Complaint, three aspects need to be considered: mobile, browser, and next generation distribution of search. On mobile distribution of search, Google has a current multi-year term agreement with Apple in which Google pays Apple billions of dollars from its advertising revenue each year in exchange for making Google's search engine the default option in Safari (Apple's web browser), and Apple's default use of Google for Siri and Spotlight in response to general search queries. The DOJ alleges that this agreement, which covers approximately 36

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<sup>9</sup> These numbers, and the other figures and assertions reported in this section are obtained from the Complaint.

<sup>10</sup> Although these contracts are aimed at maintaining Google's monopoly, they may well constitute a §1 Sherman Act violation, but the DOJ has not alleged this.

percent of all general search queries in the United States, has the effect of aligning the financial incentives of these two firms. Google obviously benefits from increased use of its search engine, which results in greater advertising revenue. Apple also benefits because it receives a share of Google's enhanced advertising revenue. This strategy allegedly raises barriers to entry by foreclosing Google's search rivals from an important distribution channel, thereby depriving them of scale.

In addition to the agreement with Apple, Google controls the mobile distribution channel through interlocking distribution agreements with other mobile distributors. Google offers its Android operating system at zero monetary cost, but controls the distribution of search by paying a revenue share on a mobile device only if it is covered by an anti-forking agreement (i.e., platform protection effort) and a preinstallation agreement.<sup>11</sup> The latter guarantees that Google's search access points are preinstalled and given prominent placement. The revenue sharing agreement allows Google to secure default status. Consequently, these agreements allegedly lock up the access points to general search on Android phones, foreclosing rivals and protecting Google's monopoly positions.

In addition to the agreements allegedly locking up mobile distribution of search, Google has entered into exclusive revenue-sharing agreements with browsers (e.g., Apple's Safari and Mozilla's Firefox browsers). Google shares the advertising revenue that it realizes from these search access points with rival browsers. The DOJ asserts that Google aims to control the next generation of search distribution channels (i.e., smart watches, smart TVs, smart speakers, and other new products) through anti-forking agreements covering next generation devices, and through restrictive contract terms mirroring the effects of mobile distribution agreements with manufacturers that do not rely on Android. The DOJ's view is that, in the absence of these agreements, rival browsers would have the ability to consider other general search engines for present default for search access points. Consequently, Google's behavior forecloses the market for search.

The DOJ argues that the alleged harm caused by Google to competition has negatively affected consumers by reducing the quality of general search services (including aspects of privacy, data protection, and use of consumer data), reducing choice in the market, and hindering innovation. According to the DOJ, because the use of exclusionary conduct also forecloses competition in the search advertising and general search text advertising markets, Google's alleged anticompetitive practices have also harmed advertisers (through higher prices and lower quality services). Finally, the DOJ

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<sup>11</sup> Anti-forking refers to platform protection efforts that prevent developers from taking a source code from an open-source software program and developing an entirely new program. Anti-forking agreements between Google and Android device manufacturers prohibit manufacturers from taking any actions that may cause or result in the fragmentation of Android (i.e., using the open-source code to start independent development on it). These agreements therefore restrict manufacturers' ability to build and distribute innovative versions of Android.

concludes that any competitive benefits arising from Google's distribution agreements can be realized through less restrictive means.

#### **IV. Adverse Economic Effects in the General Search Services Market**

An observer might reasonably wonder why scarce antitrust enforcement resources are being employed to prosecute Google. After all, no one even pays to use Google's search engine. The hallmark of monopoly power is the firm's ability to elevate prices by restricting quantity. But Google does not appear to be involved in restricting the use of its general search engine. Consumers are allowed to use Google for "free."

Google has a dominant share of the market for general search services. It is difficult to argue that Google is not a monopolist. A natural question arises: How does Google's monopoly power affect consumer welfare? Google's monopoly appears to be benign. Unfortunately, appearances may be deceiving. There may be adverse economic consequences that are not obvious. These unfortunate developments may surface in three ways: (1) price, (2) quality, and (3) innovation. Below we discuss these three areas of concern in turn. We start by defining the users and the relevant welfare measures in the general search market.

##### **Users and welfare**

There are two types of users in the general search market. The first are the consumers who search the internet for a wide range of queries and information. These queries are contained in specific websites not necessarily provided by the search engine. The owners/publishers of the websites are the second type of users. Website publishers are interested in attracting consumers to their webpage. Google's general (horizontal) search engine acts as an intermediary matching consumers' queries to the publisher's websites. Regarding welfare, we focus on the welfare of both types of users, consumers and website publishers, following the DOJ lawsuit.

##### **1. Monopoly Pricing**

Google does not charge a monetary price to consumers for the general search services provided.<sup>12</sup> But this does not mean that Google's general search engine

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<sup>12</sup> Not charging a monetary price to consumers is common practice among general search engines. Other search engines pay consumers who use their services. Bing, for example, pays consumers with credits for searching with its search engine. A consumer may earn 5 reward points per Bing search. Reward points can then be redeemed for gift cards, goods and services, and nonprofit donations. A total of 5,000 points are worth approximately \$5 according to Microsoft (see Microsoft, "How to earn Microsoft Rewards points," Support.Microsoft.com (2021), <https://support.microsoft.com/en-us/topic/how-to-earn-microsoft-rewards-points-83179747-1807-7a5e-ce9d-a7c544327174>). At the worldwide average of 4 searches per day, the mean consumer can be paid \$7 per year ( $4 \times 5 \times 30 \times 12 / 1000 = 7.2$ ). Similar to the case of Google discussed in this section, Bing's practice does not mean that consumers do not pay for the Bing search services.

searches are free. Consumers provide their personal information in exchange for Google search results and products. As FTC Commissioner Rohit Chopra testified:

“The true economic value that is exchanged with digital platforms is hard for consumers and businesses to measure. In addition, consumers and businesses using these platforms have no bargaining leverage, and they participate by “agreeing” to complex and draconian terms of service. Digital platforms can usually change these terms at any time, granting themselves more ability to collect and use data more expansively and more intensively. This is the equivalent of a price hike.”<sup>13</sup>

Based on the information gleaned from a consumer’s use of Google products, Google constructs profiles of consumers using their personal information (e.g., Android mobile operating system, Chrome browser, the app distribution Play Store, third-party apps, and exclusionary agreements). These profiles include information about the consumer’s demographics, location, mobility patterns, applications used, and internet web search activity. According to the House Report, Google constructs detailed profiles for billions of consumers.<sup>14</sup> Google then sells the consumers’ information to advertisers. Due to Google’s remarkable precision, advertisers are able to target their messages to those consumers who are most likely to become customers.

The total price paid by consumers to Google is the monetary price plus the in-kind price. The monetary price is zero. Then, the price paid by consumers is zero only if they place no value on their personal information. Consumer welfare, as measured by the area under the demand curve, is maximized when the price is zero. This may appear to be the

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<sup>13</sup> United States Congress (2019, p. 3, “Paying with Data, not with Dollars”).

<sup>14</sup> United States Congress (2020, pp. 217-218, henceforth House Report): “Google can build sophisticated user profiles reflecting a person’s demographic, where they are, and where they go, as well as which apps they use at what time and for how long. These intimate user profiles, spanning billions of people, are a key source of Google’s advantage in its ad business. In this way, Android’s location data feeds into Google’s dominance in ads. [...] Google’s internal reports show that Google was tracking in real-time the average number of days users were active on any particular app, as well as their total time spent in first- and third-party apps. Google subsequently used those data to benchmark the company’s first-party apps against third-party apps, suggesting that Google was using Lockbox data to assess the relative strengths and weaknesses of its own offerings.” The House Report continues (p. 223): “Chrome was also integrated with other Google products. By signing into the browser, Chrome automatically signed users into Gmail, YouTube, and additional Google services when users visited those sites, while also allowing users to sync their bookmarks, passwords, and other browser settings. While automatic sign-in provided a more streamlined user experience, it also helped Google build more detailed user profiles by connecting activity data to the user’s Google Account.” Even if the consumer is not signed into the browser, Google also uses cookie tracking technology to gather consumer information. For example, according to Google (See Google, “How Google Uses Cookies,” Policies.Google.com (2021), <https://policies.google.com/technologies/cookies?hl=en-US>): “most people who use Google services [in the US] have a cookie called ‘NID’ in their browsers. This cookie contains a unique ID used to remember [consumer] preferences and other information [...]”



case because Google charges no monetary price. However, as discussed below, consumer welfare is not maximized if consumers value their private information.

If consumers are fully informed, paying a positive price does not necessarily pose a problem from a welfare perspective. The value to consumers of using Google's search engine must be at least as great as the value of the information given by the consumers to Google. Otherwise, consumers would not use Google's search engine.

Two challenges arise in evaluating welfare in the case of Google. The first is that the presumption that all consumers are fully informed is not generally valid. Some consumers are not fully aware of the type and extent of personal information collected by Google. Therefore, some consumers may not know *how much* they are paying through the in-kind price. This point is related to what is referred to in the House Report as how the "opacity of data collection and use contributes to consumer confusion and the misperception that consumers do not care about their privacy the so-called "privacy paradox" simply because they use services that have become essential."<sup>15</sup> The evidence presented in the reports seems to indicate that at least a fraction of the consumers are not fully aware of all the personal information collected by Google.

The second point is whether the total price charged by Google is *too high* due to Google's monopoly power in the general search market. Consider a consumer that is fully aware of the information collected by Google. Suppose that the consumer uses Google's search engine. Then the consumer is better off than not using Google. But the in-kind price paid by the consumer to Google may still be too high. It may restrict the quantity of search services used by the consumer relative to a competitive or regulated benchmark. A welfare loss arises in such a case. Assessing whether the total price charged by Google is too high is a complex issue due to the unobservability of the competitive counterfactual scenario.<sup>16</sup> There is evidence, however, that some consumers respond to the in-kind price restricting the quantity demanded of search services. For example, some consumers do not use Google search services on their mobile devices to avoid revealing their location or mobility patterns to Google (part of the personal information collected by Google).<sup>17</sup>

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<sup>15</sup> See United States Congress (House Report). U.S. House of Representatives Report, Committee on the Judiciary, Subcommittee on Antitrust, Commercial and Administrative Law of the Committee on the Judiciary, 116th Congress, "Investigation of Competition in Digital Markets: Majority Staff Report and Recommendations," (2020) p. 54.

<sup>16</sup> The counterfactual scenario where Google does not charge an in-kind price is also unobserved.

<sup>17</sup> For examples of consumers not using Google services to prevent Google's collection of their personal data, see Greg Bensinger, *Never-Googlers: Web users take the ultimate step to guard their data*, The Washington Post, July 23, 2019. Available at <https://www.washingtonpost.com/technology/2019/07/23/never-googlers-web-users-take-ultimate-step-guard-their-data>.

We interpret this behavior as evidence that Google's total price is not zero for all consumers and that some consumers respond to Google's in-kind price. Investigating which is the total price that maximizes welfare in this market is an open question.

## 2. Quality Degradation

There are two main types of listings (or links) displayed by a general search engine in response to a consumer's query. *Organic listings* refer to the search results of the engine that are not influenced by paid advertising. Organic listings are ranked according to their relevance to the search term inputted by the consumer in the search query. *Paid advertised listings* refer to search results determined by how much the advertiser is willing to pay for them. To the extent that paid advertising listings replace organic listings, the quality of the search service is degraded.

Pushing up paid advertised listings to the detriment of organic listings after a consumer search query degrades quality in the general search market. To see this, let the *consideration set* of a consumer be the number of organic listings considered by the consumer before clicking on a listing.<sup>18</sup> One way to talk about quality in this setting is that searching for the listing that matches best the consumer query is costly for the consumer.<sup>19</sup> The presence of paid advertised listings increases consumer search costs. Paid listings that are located at the top of the search result page increase consumer's search costs because they are the first to be read but are not necessarily the ones that best match the consumer's query; that is, the absence of paid advertised listings would decrease the consumers' cost to find the best listing match. A modest increase in search cost can have important welfare implications when searching is costly for consumers as it is in the general search market.<sup>20</sup>

In evaluating welfare effects of Google's conduct on quality, there are four considerations. First, due to the presence of paid advertised listings, consumers may not necessarily see/click the listings that best match their search query.<sup>21</sup> As a consequence, quality degradation occurs. Second, website publishers who do not pay for these listings

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<sup>18</sup> Most Google searches include millions of organic listings in the search results. Consumers only consider a subset of those listings. The subset of listings considered (i.e., read) by the consumer before making the click decision is the consideration set of the consumer. For most consumers, consideration sets encompass only a few listings.

<sup>19</sup> For a recent survey of the literature on costly search and consideration set see Elisabeth Honka, Ali Hortacsu, and Matthijs Wildenbeest "Empirical search and consideration sets," *Handbook of the Economics of Marketing*. Vol. 1. 193-257 (2019).

<sup>20</sup> In a recent paper using Google search data to identify search costs, Javier D. Donna, Pedro Pereira, Tiago Pires, and Andre Trindade, *Measuring the Welfare of Intermediaries*, Management Science (forthcoming), document that a moderate increase in search costs generates a decrease in consumer surplus comparable to a large increase in market power in the setting studied.

<sup>21</sup> For example, in the cases where a best-match listing (i) does not enter into the consideration set of the consumer when paid advertised listings are present, but (ii) would have entered absent paid advertised listings. This situation creates an allocative inefficiency: the consumer clicked on a worse (relative to the consumer's preference in the query) listing due to the presence of paid advertised listings.

see a decreased number of consumer visits to their websites. The further down the organic listings are pushed, the greater the quality degradation. Third, quality degradation is exacerbated by two issues. The first issue is that some consumers do not scroll down the displayed search results; that is, the consideration set of some consumers is defined by the subset of listings that can be seen/read without scrolling down. Quality is further degraded if adding paid advertised listings pushes organic listings down requiring users to scroll down before reaching a non-paid result. The second issue is that quality is additionally degraded if some consumers are not aware that the listings displayed by the search engine are paid advertised listings. That is, opacity in the presentation of paid advertised listings may lead some consumers to confound organic and advertised listings that have been paid for. Consumers may not be able to find the organic listing that best match their query. For example, confounded consumers may not scroll down after a search query or may not refine their search query (i.e., may not perform a new search changing the wording of the query) and click on a paid advertised listing not knowing that a better match is available. In other words, the consideration set of the consumer was reduced or changed due to the opacity in the presentation of the results. Such misperception degrades quality by generating allocative inefficiencies: a consumer clicks a listing that is not the best-match listing.<sup>22</sup> Fourth, the consideration sets (consumer scrolling and search behavior) of consumers are idiosyncratic and unobservable.

### *Google's Conduct and Quality*

Before 2016, Google placed three paid advertisements (ads henceforth) above the organic listings and eight ads to the right of them. In 2016, Google added a fourth ad listing above the organic listing, three to the bottom of the page, and eliminated the right-hand-side ads. Clicks to the first organic listings have decreased by two-thirds over the past 3 years.<sup>23</sup> It is equivalent to a toll hike according to the House Report:

“The trend is especially pronounced in mobile, where organic click-through rates fell by more than 30 percent between January 2016 and June 2019, while paid click-through rates over that same period more than tripled. For businesses that depend on Google to reach users, these trends amount to a toll hike, as traffic that firms could previously draw through organic listings is now increasingly pay-for-play. Better organic search listings, these businesses must now compete for users based on how much money they pay Google. Instead of competing for users by offering high quality webpages and services that should lead to better organic search listings,

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<sup>22</sup> See previous footnote for an example.

<sup>23</sup> See United States Congress (House Report). U.S. House of Representatives Report, Committee on the Judiciary, Subcommittee on Antitrust, Commercial and Administrative Law of the Committee on the Judiciary, 116th Congress, “Investigation of Competition in Digital Markets: Majority Staff Report and Recommendations,” (2020) p. 198.

these businesses must now compete for users based on how much money they pay Google.”<sup>24</sup>

With respect to opacity, Google has made a number of changes to make the paid advertised links look similar to organic links. Examples include the elimination of the shaded background and replacement by a yellow square saying “Ad.” Some paid advertised links are not even labeled as advertisements, like links to hotels that are shown next to a map.<sup>25</sup> Although not conclusive, the reported trends and patterns are consistent with quality degradation, as defined above. Measuring the impact of quality degradation on consumer welfare requires addressing the issues mentioned in the previous paragraphs.

### 3. Google’s Influence on Innovation

Search engines can be divided into horizontal- and vertical-search engines. *Horizontal-search engines* retrieve comprehensive content from the whole web and typically generate a large set of listings. Horizontal search is also referred to as general search. Examples of horizontal search engines include Google, Bing, and Yahoo. *Vertical-search engines* retrieve specific content and ordinarily produce a shorter list. Vertical search is also referred to as specialized search. Examples of vertical search services include Expedia/Google-Travel (travel platforms), Yelp/Google-Reviews (business’ reviews platforms), and Vimeo/YouTube (online video platforms). Google is the overwhelmingly dominant provider of horizontal-search services.<sup>26</sup> We therefore focus on how Google’s dominance in the horizontal-search market affects innovation in the vertical-search market.

Horizontal- and a vertical-search providers serve different markets. The majority of vertical-search providers, however, depend on horizontal-search engines to reach users. The latter is of paramount importance at the innovation stage. That is, when the nascent vertical-provider competitor is unknown to users.

There are three ways in which a dominant horizontal-search engine may employ its monopoly power to impair innovation in the vertical search market: (i) misappropriation of vertical-search content; (ii) self-preferencing; and (iii) use of scale as a barrier to entry. We examine each point in turn.

*Misappropriation of vertical-search content* refers to situations in which the horizontal-search engine uses content from a vertical-search competitor without the competitor’s consent. More specifically, *misappropriation* refers to the instances where the vertical-search content is proprietary (e.g., due to innovation of the competitor) in

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<sup>24</sup> *Id.* at 201-202.

<sup>25</sup> *Id.* at 204.

<sup>26</sup> Google’s market share is approximately 81 percent of all general search queries in the U.S. on desktop and 94 percent on mobile (*Id.* at 77). In the market for general search services Google’s market share is approximately 88 percent according to the Complaint (Section III).

contrast to instances where the content may be public, nonexclusive, or used with consent.<sup>27</sup> There are several ways to misappropriate vertical-search content. For example, a horizontal-search engine may directly display the vertical-search content in the horizontal-search results using information boxes, featured snippets, and answer boxes, among other practices.<sup>28</sup> This practice harms the vertical-search provider because users do not need to enter the vertical-search provider website, thus resulting in lower traffic and revenue (from advertising) for the vertical-search provider. Key questions that arise to investigate misappropriation include: Is the vertical-competitor content proprietary? Was the competitor's proprietary content used by the horizontal-search engine? Did the engine delist or threaten to delist the vertical competitor to use its content? How was web traffic to the competitor's listings affected?

*Self-preferencing* refers to situations where a horizontal-search provider with monopoly power uses its dominance to favor its own vertical-search services to the detriment of those of vertical-search competitors. Self-preferencing may be implemented using algorithmic adjustments to the horizontal-search indexing or, to an extreme degree, removing the vertical-search competitor from the horizontal-search index.<sup>29</sup> Self-preferencing degrades (horizontal-search) quality. It prioritizes lower quality search results from the horizontal-search engine over superior results from the competitor. Consumer welfare is thus reduced. Self-preferencing puts vertical-search providers at a competitive disadvantage relative to Google's own listings. Consequently, it increases the distribution costs of competing vertical-search providers. To the extent that rivals feel compelled to buy advertising to improve their visibility, this practice may result in vertical competitors' exit or act as a barrier to entry. Two key elements for evaluating the competitive significance of self-preferencing are: (i) comparing the quality of the services provided by the vertical-search competitor and those of the horizontal-search engine, and (ii) the placement of both listings in the search results of the engine.<sup>30</sup> Key questions include: Does the horizontal-search engine offer the vertical-search service? When did it start? Which organic listings rank higher in the search results of the horizontal-search engine, the own listings of the engine or the ones of the vertical-search competitor?

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<sup>27</sup> Vertical-search providers sometimes incorporate digital watermarks to their content to protect their property (see, e.g., Robert McMillan "Lyrics Site Accuses Google of Lifting Its Content," Wall Street Journal (2019)).

<sup>28</sup> It is relatively easy for a dominant horizontal-search engine to implement such practices by using the information scraped by its crawler on the search-result page.

<sup>29</sup> The former, in the form of algorithmic penalty, lowers the position of the competitor's listing in the search results of the horizontal-search engine; the latter removes altogether the competitor's listing from the search results.

<sup>30</sup> Quality needs to be analyzed based on the vertical-search service case by case. For travel, for example, price may be the major consideration for consumers. One may thus compare the prices displayed by the vertical-search competitor and the horizontal-search engine. For reviews, in contrast, curation may be important. One can therefore use the number of reviews with zero characters as an indication of low-quality review. For online videos, one may use the level of engagement (see, e.g., Sam Schechner, Kristen Grind and John West, "Searching for Video? Google Pushes YouTube Over Rivals," Wall Street Journal (2020)).

*Use of scale as a barrier to entry* refers to situations where a horizontal-search engine uses its dominant position to preclude entry or to induce exit of competitors. Several forms can be used. A horizontal-search engine may use anticompetitive practices to maintain its position or the position of its own vertical-search service. Examples include antifork, exclusionary, distribution, preinstallation, and revenue-sharing agreements that may foreclose competition. Vertical-search competitors may be forced to accept such agreements due to the scale of the horizontal-search engine. A horizontal-search engine may use consumer private data as a barrier to entry. Such information may act as a barrier to entry if it is not accessible to potential competitors in the vertical-search market. Consumers' personal information may also be used to improve the bargaining leverage of the horizontal-search engine when negotiating with vertical-search providers. Consumer information improves the outside option of the horizontal-search provider.<sup>31</sup> For example, it facilitates enforcing exclusionary agreements with vertical-search providers or to negotiate revenue-sharing agreements with third-party developers (e.g., to ensure that the horizontal-search engine is the default and exclusive search engine/app pre-installed in the operating system/mobile device of the third-party developer). The mere threat of entry by a large horizontal-search provider may induce exit or result in less innovation. For example, acquisitions of nascent vertical-search providers may be induced by threat of entry of a large horizontal-search provider. These practices may result in fewer innovations in the vertical-search market. They also foreclose competition in the search advertising market.<sup>32</sup>

These channels may interact among themselves. For example, a horizontal-search engine may self-preference its own vertical-search services (or misappropriate a third-party vertical-search content) to induce a competitor to sign a revenue-sharing agreement. It may use its scale as a barrier to entry to acquire the content of a vertical-search provider.

### *Google's Conduct and Innovation*

Google has been accused of misappropriating vertical search content. Examples of such accusations include misappropriation of content from Yelp, Celebrity Net Worth (celebrities' assets), and Genius (lyrics repository).<sup>33</sup> There have also been numerous instances and disputes regarding Google allegedly self-preferencing its own lower-quality

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<sup>31</sup> This effect is analogous to the bargaining leverage effect due to direct sales. For details see Javier D. Donna, Pedro Pereira, Andre Trindade, and Renan C. Yoshida (2021), *Direct-to-Consumer Sales by Manufacturers and Bargaining*, SSRN 3779962.

<sup>32</sup> An additional consideration regarding innovation is to investigate the implications for innovation in the app market. Google's dominant position in the search market allows Google to use its app store (called Play Store) as a dominant distribution channel. It may act as gatekeeper for app distribution: "Google's revenue-sharing partners turn down opportunities to preinstall or otherwise enable innovative, search-related apps because those new partnerships could violate Google's demand for exclusivity" (Complaint, point 150, p. 48). That is, the required agreements to enter Google's Play Store may act as a barrier to entry to some developers, thus harming innovation in the app market.

<sup>33</sup> See House Report at p. 184-187 and the references therein.

vertical-search services. Examples include Google allegedly self-preferencing Universal Search (which includes Google Images, Google Local, and Google News), Froogle (Google's shopping comparison site), YouTube (Google's video streaming site); and Google allegedly imposing algorithmic-search penalties on rivals such as CitySearch (local businesses), Kelkoo (shopping comparison site), and Amazon's Twitch (video streaming site).<sup>34</sup>

There are several paths of analysis to determine whether Google may have used its scale as a barrier to entry. The first would be to examine agreements with vertical-search providers that may have foreclosed competition. A starting point may be the agreements for the above-mentioned cases of alleged misappropriation. A relevant question here is whether the agreement was reached before or after the alleged misappropriation. Second, to evaluate Google's impact on innovation, the inquiry should focus on Google's acquisition of nascent vertical-search providers that may have foreclosed competition. Google merger-and-acquisition activity was hectic during the years prior to the DOJ lawsuit.<sup>35</sup> To evaluate innovation, the focus should be on the acquisition of nascent vertical competitors during those years. Some questions that arise are: Did Google misappropriate or self-preference its own service prior to the acquisition? Did the vertical competitor continue to operate after the acquisition? The third would be to examine revenue-sharing agreements with third-party developers that may have foreclosed competition. An example to investigate here would be the Google-Apple revenue-sharing agreement that allowed Google to be the default search engine for Apple in 2005.<sup>36</sup> Some questions that arise include the following: Did Google induce vertical-search providers to buy more search advertising after the Google-Apple agreement? How was quality (of organic-listing) degradation affected for vertical-search competitors? Did Google use the agreement to induce vertical competitors to accept more stringent anti-forking, exclusionary, distribution, and preinstallation agreements? Finally, innovation in the app market may merit a thorough discussion.<sup>37</sup>

## V. Alleged Monopolization of Search Advertising

Google monetizes its products by selling digital advertising. Google's business model relies on attracting consumers' attention and collecting data about users, which are used to sell digital ads. This business model is not fundamentally problematic from a competition policy perspective. Other industries such as newspapers, radio broadcasting, and television, for example, rely on a similar business model to fund their businesses. If

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<sup>34</sup> *Id.* at p. 187-193 and the references therein.

<sup>35</sup> Between 2003 and 2018, Google engaged in 225 mergers and acquisitions, an average of 15 per year. (Own calculations based on public reports about Merger and Acquisition Activity by Alphabet, Inc. and its subsidiaries. Alphabet is Google's parent company.)

<sup>36</sup> Complaint, point 86, p. 27.

<sup>37</sup> See footnote 32 and the discussion therein.

monopoly power is exercised on one side of the market however, i.e., online search, then it is likely to manifest itself on the other side of the market, i.e., digital advertising.

Digital advertising can be broadly categorized in two: search advertising and display advertising. *Search advertising* refers to digital ads on search engines displayed alongside search engine results. Keywords entered by the user determine the selection of advertising to be displayed. The selection and targeting of these ads may also be influenced by data about the user (such as location or time). *Display advertising* refers to the delivery of digital ad content to ad space (i.e., inventory) on websites and mobile apps. Both types of advertising are typically bought and sold through real-time bidding auctions among advertisers (typically, second-price auctions with a reserve price). In the case of search advertising, advertisers bid for a specific keyword in a query. The payment is often made when the user clicks on the ad.

Because the Complaint focuses on search advertising, we limit our discussion to this category of advertising.<sup>38</sup> We note, however, that different competition authorities and digital advertiser specialists have also raised concerns about the exercise of market power in digital advertising more generally.<sup>39</sup> The DOJ alleges that Google has monopolized the search advertising market. This allegation raises three important questions, which we discuss in turn:

1. Is search advertising a relevant antitrust market?
2. If search advertising is a relevant market, (a) does Google possess monopoly power in this market, and (b) what are the sources of this monopoly power?
3. If Google had monopolized the market for search advertising, what are the potential consequences of monopolizing this market?

Ultimately, we are interested in the economic consequences of monopolizing the market for search advertising.

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<sup>38</sup> In its complaint, the DOJ defines two relevant markets for advertising, search advertising in the US and general text advertising in the US. Whereas the search advertising market consists of all types of ads generated in response to online search queries (including general search text ads), the general search text advertising market consists of general search text ads, which are ads that resemble the organic results that appear on general search engine's result pages. Consequently, the general search text advertising market is wholly contained within the broader search advertising market.

<sup>39</sup> See, for example, UK Competition and Markets Authority (CMA) (2020), Online platforms and digital advertising market study, available at <https://www.gov.uk/cma-cases/online-platforms-and-digital-advertising-market-study>, House Report, *supra* note 20, at 12, European Commission Press Release (2021), Antitrust: Commission opens investigation into possible anticompetitive conduct by Google in the online advertising technology sector, available at [https://ec.europa.eu/commission/presscorner/detail/en/ip\\_21\\_3143](https://ec.europa.eu/commission/presscorner/detail/en/ip_21_3143), or D. Srinivasan, Why Google Dominates Advertising Markets, *Stanford Technology Law Review*, Vol. 24, No 1, 2020, p. 55-175 (2021). A point in common among agencies and experts is related to the role of intermediaries, both on the buying and selling side of advertising, many of which are owned by Google. This issue is particularly relevant for display advertising.



## Market Definition

For the DOJ to prevail in Court, it must begin by defining the relevant antitrust market. The question is whether search advertising is a market that can be monopolized. The DOJ must prove that there are no reasonable substitutes for search advertising.<sup>40</sup> In other words, the DOJ must prove that an increase in the price of search advertising will not lead to the significant substitution of other online (e.g., display) and offline (e.g., outdoor) advertising.

A recent study on advertisers conducted by the United Kingdom's Competition and Markets Authority (henceforth, CMA) is helpful in understanding issues of market definition and the degree of substitutability of search advertising with other products. The results of a qualitative survey on advertisers' views commissioned by the CMA and reported in its study reveal that there is limited substitutability between digital advertising and traditional advertising media.<sup>41</sup> The study finds that advertisers generally view offline and online advertising as complementary instruments (strategies) to achieve different goals within their marketing campaigns, rather than substitutes. The complementary between digital and traditional advertising is explained by the ability to use data to target specific audiences through digital advertising, which is not possible with traditional advertising.

The study conducted by the CMA also reveals that there is limited substitutability between search and display advertising. The study documents that advertisers typically view search and display advertising as not substitutable because they play different roles within the marketing channel. In particular, display advertising is designed to raise brand awareness and reach new potential customers that might not yet have shown interest in the product, whereas search advertising is used to provide immediate answers to consumers who have already shown interest in buying the product and are at the end of the marketing decision or purchase stage.

Finally, the CMA study found that general (or horizontal) search and specialized (or vertical) search advertising (i.e., advertising that takes place in a specialized search provider, such as Yelp or Expedia) are not viewed as substitutes either. This is because general and specialized search are seen as performing different roles for advertisers: General search advertising is designed to reach consumers that have demonstrated a

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<sup>40</sup> This is because the broader the definition of the market, the less likely it is that Google is a monopolist. If Google is not a monopolist, the first condition of the *Grinnell* test will not be satisfied, and DOJ's antitrust challenge will likely fail.

<sup>41</sup> The results of the CMA study and the qualitative survey on advertisers' views are reported by the CMA in "Online platforms and digital advertising market study", available at <https://www.gov.uk/cma-cases/online-platforms-and-digital-advertising-market-study>.

general intent, whereas specialized search advertising is used to capture consumers who are actively looking for specific products or services.<sup>42</sup>

The findings reported above provide evidence that search advertising should be considered as a separate market in the UK. The CMA study indicates that Google accounts for more than 90 percent of search advertising revenues, leaving Google in essentially a monopoly position in the UK. Because the study on advertisers conducted by the CMA reveals that demand for different types of digital advertising is driven by different purposes, one would expect demand for advertising in the U.S. to be similar to demand for advertising in the UK. Consequently, to the extent that the CMA study on advertisers accurately reflects advertisers' views, one should expect a similar conclusion in the U.S. (i.e., that search advertising is a separate market).

### **Monopoly Power and Sources of Market Power**

If in fact the relevant antitrust market is found to be the search advertising market, the DOJ will have to prove next that Google possesses monopoly power in this market. In the U.S., monopoly power will be inferred from a market share that is above 70 percent. To determine this, it would be necessary to obtain the percentage of search advertising inventory offered by Google. Other markers or indicators may be necessary to assess Google's position in the market, such as an analysis of margins, prices, revenue, profitability, financial returns, or even conduct (e.g., Google's ability to dictate terms to the advertisers).<sup>43</sup> The DOJ alleges in its complaint that Google's share of the U.S. search advertising market exceeds 70 percent. If the DOJ proves that Google's share in the market exceeds 70 percent and that there are substantial entry barriers, it will have proven that Google is a monopolist.<sup>44</sup>

Google has engaged in practices that help to erect barriers to entry. Certain market characteristics also contribute to these entry barriers. Google enjoys a substantial advantage because of its dominance in the general search services market. It can deliver a much larger audience to advertisers than any other rival. To compete with Google, a rival would have to overcome Google's dominance in general search. That is extremely difficult. As we explained in the preceding section, there are substantial hurdles that rival

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<sup>42</sup> Specialized search advertising is in general more expensive than general search advertising. It is probably due to specialized search advertising being closer to the final purchase channel: The goal of this type of advertising is to sell to those customers who are in the market (i.e., consumers who have expressed a preference for a specific product).

<sup>43</sup> Google secures revenue primarily from digital advertising. According to the House report, for example, in 2019 Google's ad revenue accounted for approximately 83 percent of Alphabet's overall sales. See also footnote 35.

<sup>44</sup> Herbert Hovenkamp, *Federal Antitrust Policy*, 6<sup>th</sup> Ed., 2020 at 353; "Courts...fairly consistently hold that a 90% share of a well defined market is enough to support the necessary inference of market power. Several courts have found a market share on the order of 75% to be sufficient, but if the share is lower than 70% courts become much more reluctant to find monopoly power."

search engines would have to navigate to achieve scale in general search. Without scale, the rival does not have much to offer in advertising.

Scale is the most prominent characteristic that protects Google's dominant position in the search advertising market. Google can deliver a much larger audience to advertisers than its much smaller rivals. Thus, the smaller search engines provide limited competition in the second advertising market. In the CMA study, many advertisers explained that they rely on Google rather than Bing because of its larger scale. Google's much larger scale is competitively significant for two reasons. First, Google can deliver larger audiences than its rivals. Thus, advertisers know that their ads will be seen by a substantial number of potential customers. Second, Google has a far larger number of consumers to analyze in constructing their consumer profiles. As a result, advertisers know that their ads will be targeted more precisely on Google than on a rival search engine. This is valuable for advertisers because they can target their ads towards those customers they believe are closer to purchasing the product.<sup>45</sup> The use of consumer data acts as a barrier to entry. It allows Google to foreclose competition in the search advertising market.<sup>46</sup> Search advertising requires a search engine with sufficient scale to be able to attract advertisers.

The problem of scale as a barrier to entry does not seem to be mitigated by the presence of specialized (or vertical) search providers, such as Yelp or Expedia. As we noted above, advertisers do not view general and specialized search as substitutes. Moreover, specialized search engines also face significant barriers to entry. It is because significant investment often is required for populating and indexing the data, and developing and maintaining search algorithms.

Google's dominant position is also preserved by the presence of switching costs among small advertisers. Search advertising is bought by a diverse range of businesses, with different sizes and approaches to buying advertising. Whereas large advertisers typically use media agencies as intermediaries and different technology tools to buy advertising from different platforms with the goal of reaching a more diverse audience, small advertisers often rely on a single platform. This feature is due to greater transaction costs in multi-homing for small relative to large advertisers. The CMA study found that small advertisers typically rely on Google ads to advertise. Among the reasons offered for this decision are a lack of knowledge of effective alternatives, a high cost in terms of time and effort in learning how to use a new platform, simple self-service interface offered

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<sup>45</sup> In the CMA study, many advertisers emphasized Google's first-party data as an advantage over Bing. In addition, Google has access to third-party data in the form of tags on websites and apps on the Play Store. First- and third-party data, joint with access to extensive data on user location (where Android phones play a prominent role) that enables the possibility of targeting consumers based on location, allows Google to gather a more accurate depiction of consumers' behavior, ad exposures, and to provide an improved service to advertisers.

<sup>46</sup> See Section IV for a discussion of barriers to entry.

by Google ads, and a perception of a fair return on their investment under the current platform, which exhibits a sufficiently large market share and broad reach.

Certain actions taken by Google to secure default status as a search engine also act as a barrier to entry in the general search services market, due to the presence of switching costs on the consumers' side. Google secures default status in Safari (Apple's web browser) through revenue-sharing agreements with Apple. Through its control of Android and its revenue-sharing agreements with Apple, Google secures default status in nearly all mobile devices. According to the Complaint, in recent years Google has accounted for approximately 95 percent of search queries on mobile devices in the U.S. This issue is particularly relevant because there has been a substantial shift over time from advertising delivered on desktop computers to advertising delivered on mobile. It allows Google to capture an increasing share of search query, data, and advertising revenue.

Finally, we briefly mention the role of certain market characteristics and market design in the advertising market that help Google to preserve or exercise monopoly power. Because the prices for different search queries are determined independently, the competitive constraints faced by Google when selling advertising vary according to the customers being targeted and the search query. Even if Google faced fierce competition for some group of consumers, it may enjoy substantial monopoly power over a different group of customers.<sup>47</sup> Relatedly, Google conducts auctions to its ads. It typically uses a second-price auction with reserve price. In this auction format, the highest bid wins the auction provided that the bid exceeds the reserve price and pays the maximum between the reserve price and the bid of the second highest bidder. The CMA study finds that 60 percent of Google's auctions in the UK sell at the reserve price. This feature suggests that Google has the ability to set prices and exercise market power in this market. The ability to set prices allows Google to extract more surplus from the advertisers relative to a competitive auction setting or an auction without reserve price.

### **Monopolization and Harms**

To prevail in court, the DOJ must prove that Google attained and/or maintained the monopoly in the search advertising market through anticompetitive conduct, that this conduct cannot be deemed reasonably justified, and that any efficiencies allegedly created by this conduct do not outweigh the potential harms. Supplying search advertising inventory requires a search engine. As noted above, advertising inventory offered by specialized (or vertical) search engines is not seen by advertisers as a reasonable substitute for general search advertising. Consequently, anticompetitive conduct and monopolization of general search services supports the monopoly power in the search

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<sup>47</sup> To illustrate, the CMA study on advertisers reveals that some advertisers see Bing useful for targeting older, less tech savvy audiences. Consequently, the competitive constraint faced by Google when selling advertising targeting this type of audience is likely to be stronger than the competitive constraint faced when targeting a different audience.

advertising market.<sup>48</sup> In other words, by monopolizing the general search services market Google also monopolizes the search advertising market. Scale and data about users are critical to attract advertisers. As it was previously described, scale matters for advertisers because it implies a potential larger customer base and also allows search engines to collect more consumers' data and characteristics, which is valuable for advertisers because they can target their ads towards those customers they believe are closer to purchasing the product. Therefore, by monopolizing the general search service market Google denies competitors the consumer data that are critical to success in the general search advertising market.

Monopolization of the search advertising market likely creates different harms. Perhaps the most apparent consequence of the exercise of monopoly power in the search advertising market is the ability to set higher prices. The CMA study finds, for example, that for the same search queries in a given week in the UK, Google charged prices on average 30-40 percent higher than those set by Bing. Although this finding is consistent with the exercise of monopoly power in the search advertising market, it could also be explained by differences in demand due to Google's advantages in terms of data and scale. Stronger evidence supporting monopoly power is provided by the CMA study when comparing the difference between the winning bid and the price paid, between Google and Bing. On average, Google exhibits a price-bid ratio 10-30 percent higher than Bing. The price-bid ratio summarizes the ability of search engines to extract surplus from advertisers, provided that the bid captures the true valuation by the advertiser. Consequently, a higher price-bid ratio implies lower advertiser surplus.<sup>49</sup>

The exercise of monopoly power in the search advertising market extends to dimensions beyond price. Outcomes in advertising auctions depend on price and measures of ad quality. The latter measures assess the relevance of the ad content to the user. Search engines control how much weight is assigned to quality metrics when determining the winning bid. A lower weight on quality metrics results in higher prices at the expense of degrading quality for users, given that search ads displayed will be less relevant. A search engine holding monopoly power and a weak competitive constraint faces users which are less likely to switch to another search engine if the quality of the ads is low. Consequently, such a search engine holding monopoly power has an incentive to place a higher weight on price than on quality metrics, prioritizing revenue at the expense of quality. This feature negatively affects users' welfare (see Section IV).

Google's dominant position in the search advertising market seems to also negatively affect transparency in the market. Over time, Google has implemented

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<sup>48</sup> See Section III on Google's use of anti-forking and revenue sharing agreements to allegedly monopolize the general search services market. See Section IV for a discussion of potentially anticompetitive conduct in the general search services market.

<sup>49</sup> As noted by the CMA, this result could be explained by greater market power, but also as a result of greater bid density.

changes on ad load and presentation of search advertising with the goal of increasing the probability of users clicking on paid advertised listings (ads) rather than clicking on organic links. Google has also changed its keyword matching algorithm used in auctions. Before the change, advertisers were allowed to specify that the keyword provided exactly match the search term. The change implemented by Google disallowed this option and allow for “close matches.” These changes not only restrict the ability of advertisers to choose in which auctions to participate, but also may lead to advertisers participating in auctions for search terms that are less relevant to them. Because these changes are expected to increase bid density, prices paid for advertising are expected to increase.<sup>50</sup>

A final point worth considering relates to the selection of advertisers; that is, the fraction of website publishers who decide to purchase search advertising. Following the DOJ lawsuit categorization into general search and search advertising market, website publishers may also be categorized in two: (i) those who rely on the general search engine to attract consumers to their website (i.e., those website publishers who do not use paid ads to attract consumers to their websites); and (ii) those who also rely on the search advertising market to attract consumers to their websites, in addition to (i). The discussion regarding price in the general search market (zero monetary price plus positive in-kind price) also applies when analyzing publishers’ welfare with the following modification. Website publishers can choose to buy advertising in the search advertising market to promote their website in the search results displayed to consumers. Some publishers therefore pay a positive monetary price. Such monetary price may be affected by the quality degradation practices discussed in Section IV and/or Google’s monopoly power in the search advertising market. For example, absent quality degradation practices (e.g., Google pushing up its featured advertised listings in the search results page displayed to the consumer to the detriment of organic listings),<sup>51</sup> some advertisers may choose not to buy paid advertised listings in the search advertising market. Therefore, the welfare of some website publishers’ is further reduced under the presence of quality degradation practices.<sup>52</sup> In other words, the selection of website publishers who decide to purchase search advertising is endogenous to the Google’s quality degradation in the general search market (see Section IV for details). An additional complication that arises in the evaluation of publishers’ welfare in the general search market is the unobservability of the counterfactual scenario without the search advertising market. One may also need to

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<sup>50</sup> Other concerns about transparency in search advertising auctions relate to changes implemented by Google on how outcomes are reported. According to the CMA study, many specialized search providers have complained that Google no longer provides information to advertisers on the average position in which their ads were shown in search auctions.

<sup>51</sup> See the discussion about quality in Section IV for a definition of organic and advertised listings.

<sup>52</sup> Those website publishers whose listings are pushed down in Google’s search results (due to the quality-degradation issue explained in Section IV) would experience a decrease in the number of visits to their webpages relative to a scenario without quality degradation.

account for the fact that quality is purposely degraded by Google to create the search advertising market.<sup>53</sup>

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## VI. Remedies

In its Complaint, the DOJ has alleged that Google has monopolized three distinct, but related, markets: general search services, search advertising, and general search text advertising. We discuss some potential remedies that may be individually or collectively employed if the DOJ eventually prevails in court. The DOJ Complaint is a civil rather than criminal action. It is not clear why the DOJ did not file a criminal case, but criminal sanctions would not fix the competitive problem. The threat of criminal sanctions may deter unlawful behavior, but they will not restructure the market for general search services or the companion advertising markets. The court can, however, employ structural relief, behavioral relief, or both. We note, however, that if the DOJ prevails, the remedy proposed will ultimately depend on the evidence presented and collected in court.

At the core of the Complaint is the claim that Google has maintained its monopoly position through the use of anti-forking, preinstallation, and revenue-sharing agreements. These agreements allow Google to secure its default status as a search engine. A simple behavioral remedy addressing this issue could involve either forbidding anti-forking, preinstallation, and revenue-sharing agreements or eliminating the terms that allow Google to secure default status as the search engine. This remedy is likely to erode the barriers to entry created by these exclusionary contracts and promote competition among search engines.

Alternatively, if it is found that Android plays a prominent role in denying entry to competitor search engines in the mobile distribution market, the court could ask for structural relief in the form of a break-up of Android from Google. One would need to balance the costs and benefits of this remedy relative to less intrusive relief, such as directly addressing the exclusionary agreements discussed above.<sup>54</sup>

The barriers to entry created by Google's default status as a search engine could also be addressed using *choice screens*. Under this remedy, consumers are offered a list of search engines when using search access points (e.g. web browsers). This remedy was implemented in the E.U. a decade ago when the European Commission mandated Microsoft allow consumers to choose among different web browsers on Windows

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<sup>53</sup> Quality degradation also affects consumer welfare as discussed in Section IV. Consumers, however, do not buy advertising in the search advertising market.

<sup>54</sup> A break-up of Google may have implications for quality and innovation in general search services and the Android operating system.

devices.<sup>55</sup> It has also been implemented recently in the European Commission case against Android.<sup>56</sup> In the latter case, however, Google used its discretionary position to implement the design of choice screens to continue self-preference its search engine.<sup>57</sup> This issue shows the importance of the design and the monitoring of such practices. In this sense, the discussion about the divestiture of Android from Google acquires more relevance due to a fast-changing, unregulated market, where dominant firms like Google have the ability to continuously change their practices to sustain their dominant position. We emphasize, however, that a careful assessment of the pros and cons needs to be conducted.

Finally, the Complaint stresses the role of scale to successfully compete in the general search services market. Google's scale advantage lies in its larger customer base, which allows Google to both improve its search algorithm and to better understand consumers' preferences based on search queries and click-stream data. There are several elements of natural monopoly in this market. In that regard, a potential remedy would be to require Google to share its infrastructure with potential competitors. For example, the court could force Google to share its search query and click-stream data with competing search engines. This remedy would allow competing search engines to improve their search algorithms and the quality of their search results. It could result in additional consumers using competing engines, therefore helping to overcome Google's scale problem due to data advantages. If enough consumers switch to competing search engines, Google's dominant position in search advertising markets will also be challenged.

Similarly, the court could require that Google anonymize and share with potential competitors in the advertising markets, the information about consumers collected by Google. This remedy could allow other firms and platforms to compete with Google in advertising markets, using Google's own platform and information. It could allow the use of Google's own scale to introduce competition in these markets.

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<sup>55</sup> European Commission Press Release (2009), Antitrust: Commission accepts Microsoft commitments to give users browser choice, available at [https://ec.europa.eu/commission/presscorner/detail/en/IP\\_09\\_1941](https://ec.europa.eu/commission/presscorner/detail/en/IP_09_1941).

<sup>56</sup> See, for example, European Commission Press Release (2018), Antitrust: Commission fines Google €4.34 billion for illegal practices regarding Android mobile devices to strengthen dominance of Google's search engine, available at [https://ec.europa.eu/commission/presscorner/detail/en/IP\\_18\\_4581](https://ec.europa.eu/commission/presscorner/detail/en/IP_18_4581), and European Commission Speech (2021): Defending competition in a digital age, available at [https://ec.europa.eu/commission/commissioners/2019-2024/vestage/announcements/defending-competition-digital-age\\_en](https://ec.europa.eu/commission/commissioners/2019-2024/vestage/announcements/defending-competition-digital-age_en).

<sup>57</sup> See, for example, Foo Yun Chee, *Google loosens its search engine grip on Android devices in Europe*, Reuters, June 2021, available at <https://www.reuters.com/technology/google-says-rival-search-engines-can-appear-android-devices-europe-free-2021-06-08/>.



## **VII. Conclusions**

In order to prevail in its suit against Google, the DOJ's biggest hurdles appear to involve (1) market definition and (2) conduct. Given the markets alleged in the Complaint and its characteristics, Google's market shares are presumably large enough to support an inference of monopoly in the relevant antitrust markets. A good deal of Google's conduct appears to be unnecessarily exclusionary. As a result, there appears to be ample economic support for the DOJ's Complaint. In our view, the sticking point will be in the remedy. Fines are pointless if there is no structural change. Structural relief through divestiture may be more harmful than it is useful. Behavioral relief that forbids the monopolizing conduct may be far more useful, but change will not occur over night.