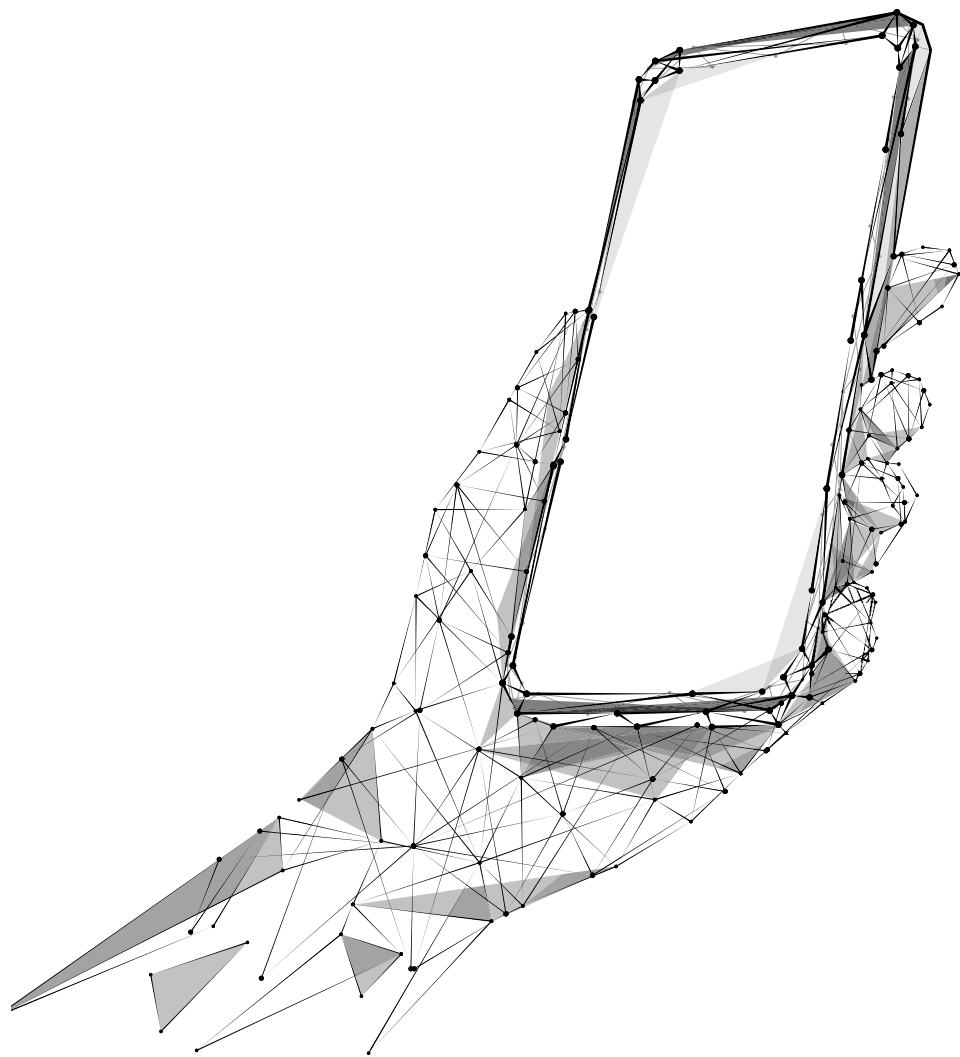


Roadmap for a Monopolization Case Against Google Regarding the Search Market

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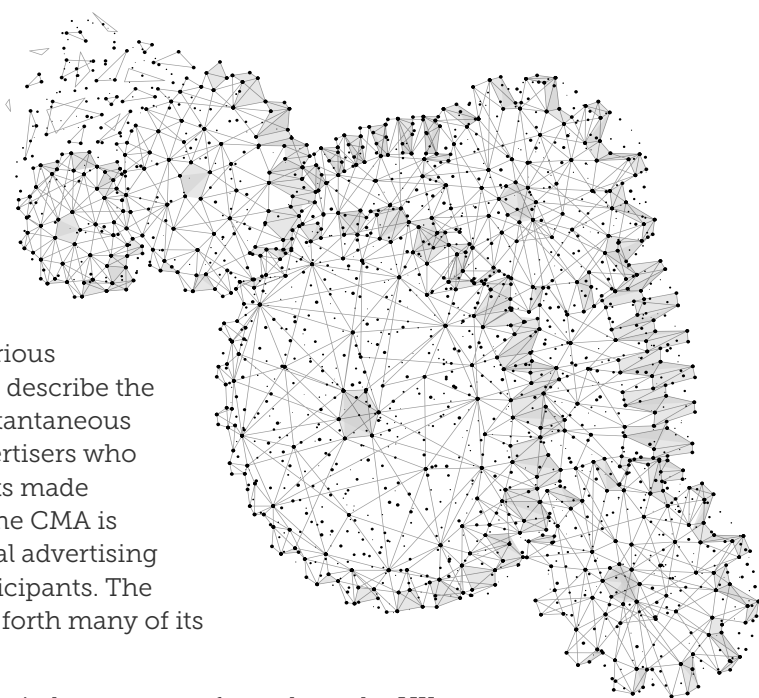
Introduction

Google processes 3.5 billion searches per day.¹ This number exceeds by orders of magnitude the number of searches conducted by any other search engine. This paper explores why this is. How did Google become so dominant in search and who, if anyone, has been harmed? Is it possible that Google has violated US antitrust law on its route to dominance?

We explained in a previous paper how Google used its dominant position in search to annex and occupy all the various functions of what is called the “ad tech stack,” a term used to describe the collection of entities that, collectively, facilitate the near-instantaneous auctions that allow websites to sell advertising space to advertisers who want to advertise there. That paper was based largely on facts made public by the UK Competition & Markets Authority (CMA). The CMA is conducting an investigation into online platforms and digital advertising in which it has gathered facts and data from UK market participants. The CMA in December 2019 released an Interim Report that sets forth many of its factual findings and initial conclusions.

This paper, as did our prior one about the ad tech stack, relies in large part on facts about the UK market that the CMA made public in its Interim Report. Several enforcement agencies in the United States also are conducting investigations of Google’s conduct in the US, but none has released any facts or findings. However, the European Commission investigated Google for anticompetitive behavior starting in 2015.² The Commission’s decision relied on documents collected from and interviews with those relying on Google’s suite of services (such as Android phone manufacturers), Google’s competitors, and Google itself. We draw on facts made public in connection with a 2017 decision by the EC finding that Google had improperly favored its own comparison-shopping service over competing services and imposed exclusionary contract terms in connection with its Android operating system.³ Because of these actions, we have several sources to draw upon: the CMA interim report, the DG Comp documents from the EC, and a leaked memo from an FTC investigation that concluded in 2013 (only every other page of which was visible).⁴ We use these materials to try to answer the questions antitrust lawyers and economists are likely to ask, including, for example, questions about market shares, barriers to entry, evidence of injury to competition, and the like. Of course, if US facts are different from those we rely on here, our answers and analyses might change.

The facts we examine below are, in some ways, unsurprising: Google has a vastly dominant market share of the search market, however defined or measured, and therefore also has market power. But understanding how



1 See Maryam Moshin, *10 Google Search Statistics You Need to Know in 2020*, OBERLO (Apr. 3, 2020), <https://www.oberlo.com/blog/google-search-statistics>.

2 Press Release, European Comm’n, Antitrust: Commission sends Statement of Objections to Google on comparison shopping service; opens separate formal investigation on Android (Apr. 15, 2015), https://ec.europa.eu/commission/presscorner/detail/en/IP_15_4780.

3 If facts in the US are markedly different than they are in the UK or in Europe, our analysis of course could change. We see no obvious reason that would be the case, however, given that Google Search operates a global business and faces the same fundamental dynamics and incentives regardless of geography. In addition, we are aware the FTC investigated allegations that Google unfairly gave preference to its own shopping and other services and issued a decision in 2013 declining to proceed with enforcement proceedings. See Statement of the Federal Trade Commission Regarding Google’s Search Practices In the Matter of Google Inc., FTC File Number 111-0163, January 3, 2013. The FTC declined to proceed because it believed the evidence suggested that Google engaged in self-preferencing in order to improve its search results rather than to disadvantage rivals to its own specialized services. See *id.* at 2. We view the facts regarding Google’s disadvantaging specialized search engines differently than the FTC did. To us, those facts appear to be part of a larger pattern and strategy of denying scale to potential rivals in *general* search rather than simple unfair self-preferencing of its own specialized services. The conduct the FTC examined in 2011-2012 is similar to some of the conduct we examine here. But we view these facts through the lens of hindsight in which it now is clear that Google’s preferencing its own services may have been more valuable to it as a way to deny scale to potential horizontal rivals, rather than simply as a means to capture profits in a particular vertical. The 2013 FTC Google decision therefore does not alter our analysis.

4 The leaked FTC memo was published in the Wall Street Journal but only includes every other page. *The FTC Report on Google’s Business Practices*, WALL ST. J. (Mar. 24, 2015), <http://graphics.wsj.com/google-ftc-report/>.

Google rose to dominance and the reason its methods likely were anticompetitive is not as obvious. It requires some understanding of the idiosyncratic economics at play in the search market—economics that result from the interplay between the fact that search engines are ad supported and the fact that they benefit in unusual ways from scale. We explain in the paper how Google took advantage of this interplay to disadvantage and exclude its rivals and potential rivals from the market.

Search markets work as follows: search engines build vast indices of web pages from the searchable web. A user types a search query and the search engine uses algorithms to select web pages (that it has cached and indexed) that then are listed on a results page. Those are called “organic results.” Search companies can also serve ads that are prompted (for the most part) by the words or phrases that appear in the search query. A search for “roofer” yields a series of paid advertisements for—you guessed it—roofers. These “search ads” generally appear above and beside the organic results.

Search engines have a financial incentive to hone their algorithms so that they produce “relevant” results, for a number of reasons. First, if the user finds what she is looking for after just one search (as evidenced by, for example, her clicking on a single organic result and then going on her merry way), she is more likely to return to that same search engine for subsequent searches because it gave her exactly what she wanted. And the more often she returns to that search engine to conduct a search, the more ads the search engine can show to her. Second, the search engine can charge more money for advertising if it is really good at serving relevant ads to the right people, i.e., people who are most likely to click on those ads and make a purchase as a result.

The thing about relevance, though, is that the only way to get good at it is to have lots and lots of people running searches on your search engine. Search engines “learn” from the behavior of the people running searches, including by monitoring how the users respond to and interact with search results. If very few people who type “roofer” click on an ad or an organic result the search engine selects for them about plumbing, then the search engine will learn over time not to select ads or results about plumbing. The reverse is obviously true as well. The search engine over time will learn what results are most relevant for particular searches if a lot of people click on those results. Because of this, search engines have a tremendous incentive to grow their scale—that is, the number of people conducting searches on their engine. The more searches, the more relevant the search engine can make the results; the more relevant the results, the more likely the engine is to attract additional users and searches; the more users and searches, the more relevant the future results. The CMA calls this a “feedback loop.” In economic terms, the increase in scale leads to an increase in quality, and the increase in quality leads to further increases in scale. And while this “feedback loop”⁵ is playing itself out, of course, the engine becomes increasingly attractive to advertisers and can charge increasingly high prices for advertising.

The feedback loop can eventually weaken, however. Additional queries start to provide less and less new information. At some point, additional searches don’t help the search engine increase the relevance of its results because, in lay terms, there have been so many searches that the search engine has learned all there is to know. This pattern is called diminishing marginal returns. Given a moderately common search, a search engine with many users might reach the point of diminishing returns quickly, whereas a very small search engine might take much longer to reach that point or never reach it at all because it just doesn’t have sufficient scale. It therefore is a very good thing from a competitive standpoint to be large rather than small. The large search engine generally can monetize searches at higher prices than the small engine. In other words, it’s often the case that the scale of the large search engine allows it to determine relevance better and match to the right ad for a higher price than the small search engine.

Lots of businesses benefit from scale; that is not unusual. But what is unusual about the search market in particular is that the large search engine actually has a financial incentive to *deny* scale to its smaller competitors or potential competitors, not just gain scale for itself. This is why: search engines generally must pay “traffic acquisition costs” to get people to use them and build scale. An example would be a payment to be the default search engine for a particular web browser. In order to obtain the traffic from that browser, a search engine would be willing to pay an amount that reflected the expected value to it of the ads it could serve there. For a small search engine, this is

5 See Competition & Mkts Auth., *Online Platforms and Digital Advertising: Market Study Interim Report* ¶ 3.135 (2019) (“Strong same-side network effects lead to feedback loops. More users joining the platform leads to still more users joining, whilst users leaving the platform leads to still more users leaving.”) [hereinafter “CMA Report”].

Any time a small search engine gains scale, that would have the effect of raising the large search engine's traffic acquisition costs going forward and eating into its profits...

the monetization level at the scale the default position would bring. The large engine is willing to bid more than this level, if, due to its scale, it can monetize at a higher price, meaning this additional tranche of users is more valuable to the large engine than to the small one. Therefore, the large engine will tend to win a bidding contest for that traffic.

But let's say the small engine for some reason secures the default position and gains additional users, and thus scale. Because of the additional scale, it then will be able to monetize all of its users at a higher rate (because of the feedback loop between scale and quality and its effect on price). Now the small engine is a more vigorous and stronger competitor. The next time an opportunity to acquire traffic arises—another browser default position becomes available, for example—the small engine will be willing and able to pay *more* per user this time than before. If the large search engine wants to win the second tranche of users by outbidding the small search engine, it has to pay more than it would have *if it had prevented the small search engine from winning the first tranche in the first place*, because it must outbid the small engine's (relatively) higher price.

This pattern could continue. Any time a small search engine gains scale, that would have the effect of raising the large search engine's traffic acquisition costs going forward and eating into its profits, because it would have to outbid the higher price the now-medium-sized engine can bid as a result of its increased scale. This is why the large search engine has an incentive to *deny* scale to its competitors, not just to gain scale for itself. In this way, Google's incentives mirror those that led Microsoft to impose licensing terms—deemed illegal by the U.S. Court of Appeals for the D.C. Circuit—that made it difficult for rival browsers to access customers. Those internet browsers did not themselves pose a direct threat to Microsoft's operating-system monopoly—they served a different function and occupied a different market—but if they were to grow in popularity they could bypass Microsoft's operating system, thereby undermining Microsoft's operating-system monopoly.⁶ Microsoft had an incentive to prevent those competing browsers from gaining any scale at all in order to maintain its monopoly. The facts we describe below show that Google has a similar incentive to restrict the growth of rival search engines and specialized search to maintain its lucrative monopoly in search.

Based on the evidence that has been made public in all of these investigations, it appears that Google has acted on this incentive for many years, to the detriment of its competitors and its potential competitors in search (including specialized search engines), to advertisers, and to competition and consumers. We describe in the paper four categories of potentially anticompetitive conduct that denied scale to competitors or potential competitors, or, at the least, disrupted the feedback loop between scale and quality that might have allowed these other search engines to prosper:

⁶ See *United States v. Microsoft Corp.*, 253 F.3d 34, 60 (D.C. Cir. 2001) ("Therefore, Microsoft's efforts to gain market share in one market (browsers) served to meet the threat to Microsoft's monopoly in another market (operating systems) by keeping rival browsers from gaining the critical mass of users necessary to attract developer attention away from Windows as the platform for software development.").

1. Google obtained default positions and exclusive default positions on home screens and with browsers that denied scale to rivals.
2. Google developed the branded Android operating system, then made it available to handset manufacturers and wireless carriers on the condition that they disadvantage or exclude rival search engines, which denied those rivals the ability to obtain scale.
3. Google acquired companies that provided valuable inputs to horizontal rivals that might have allowed those rivals to increase quality and attract traffic. Google's purchase of those companies undermined the ability of the rivals to rely on those companies to help build scale.
4. Google manipulated its search results and exercised its market power in other ways to disadvantage specialized search engines, all of whom are potential rivals, and all of whom (because users often get to these sites through Google searches) rely on Google for traffic and thus scale.

Some of this conduct may have created a monopoly position for Google; this is an issue we cannot address in this paper because it requires access to too many facts that are not public. What seems plain from the public evidence, however, is that the anticompetitive conduct of Google allowed it to maintain its monopoly without needing to compete on the merits.

This paper will address potential remedies only briefly, but we generally want to emphasize that, because of Google's market power and significant barriers to entry, the search market is not going to correct itself. Given Google's immense advantage in scale, the complex web of exclusive contracts it has woven involving its own operating system and handset OEMs and wireless carriers, it seems a new entrant might need to develop not just its own web index and search algorithm, but maybe in addition its own operating system or even handset. And it also would need to come to the battle armed with the billions and billions of dollars necessary to buy back from Google the users and scale that Google acquired through anticompetitive behavior. Alternatively, we could imagine a more competitive market in which Google were prevented from disadvantaging rivals including specialized search engines that rely on it for traffic; those specialized search companies and other rivals might then be able to sell high-value advertising and erode some of Google's monopoly profits or expand into other profitable verticals.

This much, though, is clear. We do not know what the search market might look like today if Google had not engaged in anticompetitive conduct for years. But given the importance of search to all of our lives,⁷ it's time we found out.

The Business Model of Search and Resulting Financial Incentives

The early days of Google could have been stolen from a Hollywood screenplay. Two Stanford students, Larry Page and Sergey Brin, built a search engine for the World Wide Web in their dorm rooms. Originally named "Backrub," later changed to Google, the two launched a company with a mission "to organize the world's information and make it universally accessible and useful."⁸ While today Google is everything from a mobile operating system to an email client, at its foundation, Google began as a search engine for the then-novel World Wide Web.

The early foundation for Google Search can be found in a 1998 paper by then-students Page and Brin: "The anatomy of a large-scale hypertextual Web search engine."⁹ The Internet was designed as a decentralized network, with a seemingly infinite ability to expand with an equally infinite number of potential content creators. This made developing an indexing system for the Internet a daunting task. Page and Brin's answer was a system they dubbed "PageRank." PageRank used links to content as a way to order its search results. Pages are ranked higher if

⁷ Moshin, *supra* note 1 (noting 84% of people perform at least three searches a day).

⁸ GOOGLE, *About Google, Our Company*, <https://about.google/> (last visited June 15, 2020).

⁹ Sergey Brin & Lawrence Page, *The anatomy of a large-scale hypertextual Web search engine*, STAN. UNIV. INFOLAB (1998), <https://snap.stanford.edu/class/cs224w-readings/Brin98Anatomy.pdf>.

there are more pre-existing links to them from high-quality sources. The example used in Page and Brin's paper is a simple Google Search for "Bill Clinton."¹⁰ The top result is to the whitehouse.gov domain due to the plethora of other websites linking to this domain. PageRank, despite tinkering over time, remains the foundation of Google Search to this day.

The business of a search engine is to understand the query so it can deliver to the consumer the answer she is looking for. That both satisfies the consumer, and so holds her attention during the search, and also gives her a reason to come back when she has another query. Holding the consumer's attention allows the search engine to sell advertising that she will see. Another reason the search engine wants to understand the query is so that it can create a good match between what the consumer is looking for and advertisers that can satisfy that need. Being able to offer advertisers valuable spots on the Search Engine Results Page ("SERP") is how it earns revenue and sustains the business. If a consumer searches for "custom t-shirts birthday" she may be looking to purchase custom t-shirts for a birthday party, which makes her a potential customer for t-shirt makers. The search engine will generally be able to sell the ad spots on the results page at a higher price to makers of custom t-shirts than to makers of another random product.¹¹ By analyzing many of the same search, the search engine will learn e.g., that consumers who type such queries are likely to click on ads for a custom t-shirt maker, a retailer of birthday party supplies, and a maker of custom decorations in certain proportions. This helps the search company market its results page to the right businesses and judge the relevance of both organic links and possible advertisers. It also raises the value, and therefore price, of the ads being sold. This concept of match quality between the consumer and the advertiser is often called "relevance" and manifests itself in the price of the ad which is also sometimes referred to as "monetization" or "profit per search."

The ability to charge high prices for ads that are well-matched to the searching consumer provides the search engine with a strong profit motive to understand and respond to consumer queries. This activity has significant returns to scale. The more often a consumer types in "custom t-shirts birthday," the more instances the search engine can study to learn what the consumer then chose to do. Did she click on an organic link, and if so, which one? Which ad did she click on? The more queries a search engine sees, the better it can get at determining what the user is looking for and the better it can therefore monetize that user (or other users who make similar queries) and her time with a matching ad.

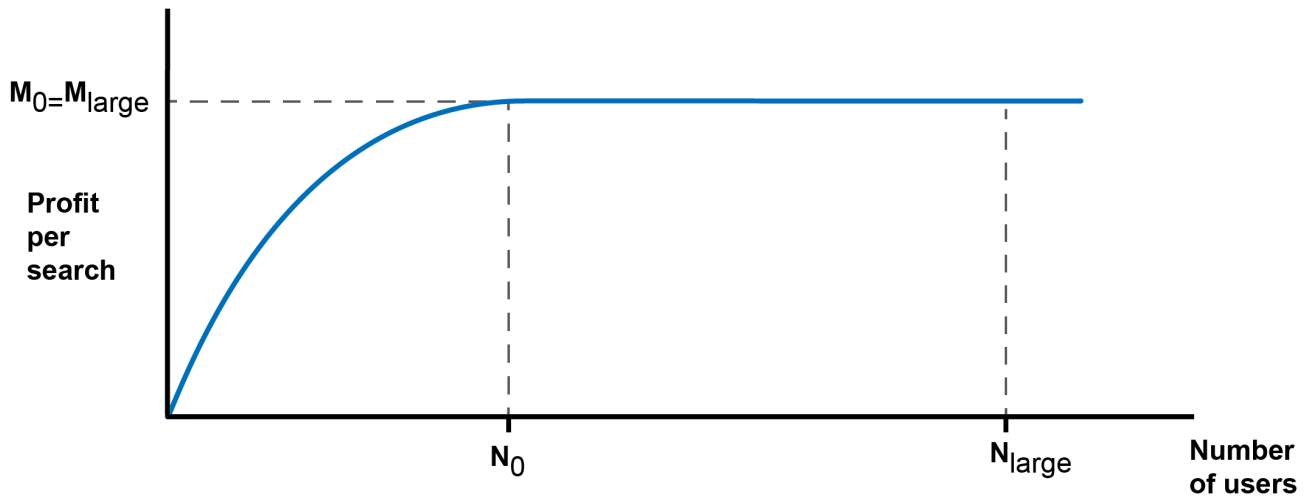
However, these returns to scale eventually flatten out. Suppose Google receives tens of millions of queries annually for a straightforward search. It will not take Google very long to learn everything there is to know about consumer behavior with respect to that search, and an additional thousand queries will improve the relevance of results and monetization very little. This decline in the usefulness of the "marginal" searches (e.g., the last one thousand) is what economists call "diminishing returns" or "diminishing marginal returns" and is common in many settings.

Interestingly, these diminishing returns kick in at different levels of a search engine's popularity depending on the prevalence of the search. If searching for custom t-shirts is a common search, then a small search engine may nonetheless have enough consumers to generate a lot of searches, allowing the search engine to quantitatively measure which answers satisfy consumers and achieve a high level of monetization. For these common queries, the larger search engine has more queries than it "needs" in some sense. It gets to diminishing marginal returns more quickly than the small engine but, in this case, that is not commercially relevant as they both deliver high relevance for this search. When both search engines operate on the flat part of the curve, the small search engine and the large search engine will have similar quality answers and ads in this example, and therefore similar monetization rate and per click revenue. This situation is depicted in Figure 1.

¹⁰ *Id.*

¹¹ If the search engine knows some demographic information and is aware that the consumer is wealthy and lives in a zip code with a high rate of luxury car ownership, then a luxury car maker might find it worth buying an ad because of the large amount of profit it would get from a sale, though it should expect a sale to be rare, given the search term. The search engine will typically downweight such ads on the grounds that they are less relevant to the search query.

Figure 1

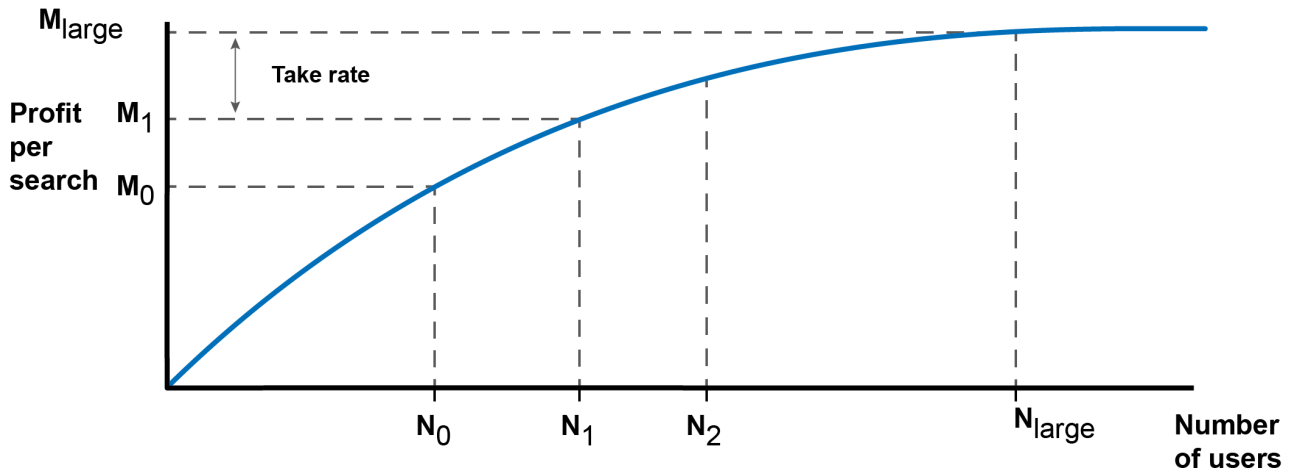


In this graph, both search engines serve everyone and the full range of queries. However, one important example of competition between a large and small search engine occurs when the smaller search engine is specialized. Suppose that 5% of Google’s queries are about travel but 100% of TripAdvisor’s queries are about travel. If TripAdvisor had one-twentieth the number of queries as Google, that would yield the same number of travel queries for each engine, and therefore TripAdvisor could achieve relevance at the same rate and monetize equivalently in that *segment*. Of course, TripAdvisor would have little ability to answer a query about finance or finding a plumber, but its consumers are visiting the site because they are interested in travel. Niche search engines can, by limiting their scope, match the ability of Google at a smaller scale. And they will have a stronger financial incentive to limit their scope if they can focus in an area where the products are expensive, high margin, or the consumers have a high lifetime value (high spend, repeat buyers) because ads will garner a high price even if their total number is lower.

In the setting depicted in Figure 1, search engines with large numbers of customers and search engines with a small number of customers are likely to do a similarly good job providing relevant results and placing valuable ads. For a different reason, truly rare queries, so rare that the search engine might only receive one per year, may not have any similar past queries to help guide an answer and the two search engines could have similar abilities to sell a relevant ad (i.e., not very much ability at all).

However, if the search is less common but not rare, then the larger search engine will experience returns to scale past the reach of the smaller search engine. That is, its monetization ability will keep rising beyond the size of the smaller search engine because it takes many consumers to get scale on this query. The large search engine learns more and is more likely to perform better than the small one that has less data to guide its answer. Figure 2 demonstrates the case of this type of search. It shows that the small search engine’s monetization (M_0) at its low scale (N_0) is less than that of the big search engine (M_{large} at N_{large}).

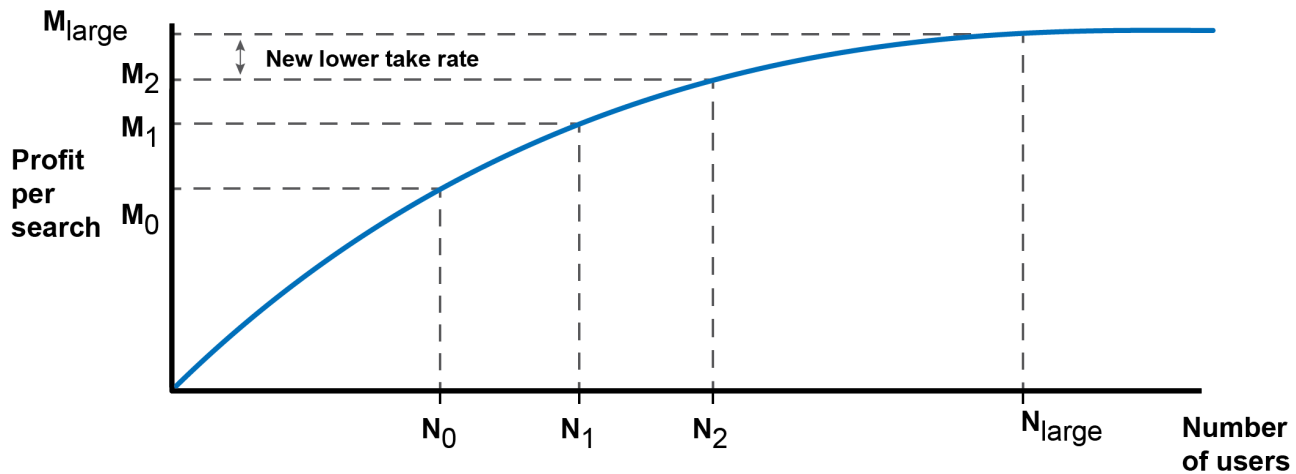
Figure 2



Take Figure 2's case of asymmetry where this search engine competes with Google, a large search engine. Consider the value of an incremental set of users that a portal, handset maker, or content business could bring to either search engine. Suppose that portal or content business realizes that search activity is valuable, so it holds an auction for the right to serve the search traffic on its site, thereby creating competition between the two search engines. Both Google and the small search engine bid. As can be seen in Figure 2, without the new traffic, the maximum bid of the small engine is M_0 . The small search engine starts at point N_0 and moves to point N_1 where it has more scale, it does a better job matching, it attracts more advertisers, and its ads are worth more. Therefore, its profit per search increases. If it wins, the small engine's size will have increased and so its value per user and bid will be higher at M_1 . This realization means the small search engine is willing to bid M_1 . Notice that at M_1 we expect the large search engine (Google) to win the contract by bidding slightly above M_1 and thereby earning a margin of $M_{\text{large}} - M_1$ on each click.

If for some reason the smaller engine wins the contract, however, its monetization rate will rise to M_1 , going forward, and in all future auctions for more traffic Google will need to bid slightly above M_2 in order to win. This is a material threat to profits for Google. As can be seen in Figure 3, Google's margin will fall to $M_{\text{large}} - M_2$ (which is less than $M_{\text{large}} - M_1$) because its smaller competitor has grown and can put more pressure on Google to bid higher amounts for search traffic. Google's monetization rate, M_{large} , does not change in this example because it has reached the point of diminishing marginal returns; its value per user is constant. In this example, Google can win the new business by paying more than the smaller engine for an exclusive right to the traffic.

Figure 3



Whether or not Google’s value for the particular deal is higher, these deals have a strategic purpose for Google. If Google ever fails to keep new business away from the small search engine, the small engine will grow in scale, increase in profit per search, and permanently reduce Google’s future margin on deals for new traffic. If a small rival grew to the point where it hit zero marginal returns also (M_{large}), the two would bid against each other up to the point of zero profit. This outcome—driven by competition from an at-scale rival—is what Google seeks to avoid. By keeping rivals small and weak, the margin on Google’s search traffic is higher. This margin, the difference between what an advertiser pays and what the traffic generator receives, is known as the “take rate.” Holding the price of a click constant at M_{large} , a lower payment to the traffic generator (the bid), generates a higher take rate for Google, and higher profits for Google. Importantly, this is true even when Google’s monetization rate does not change with the additional traffic.

Market Definition

Examining whether Google may have engaged in monopolization in violation of US antitrust law begins with defining a relevant product market. The market-definition exercise brings structure to the analysis and allows the calculation of market shares. A product market is composed of products that have reasonable interchangeability for the purposes for which they are produced—price, use and qualities considered. This definition focuses on demand substitution, which depends on buyers’ views of which products are acceptable substitutes or alternatives.

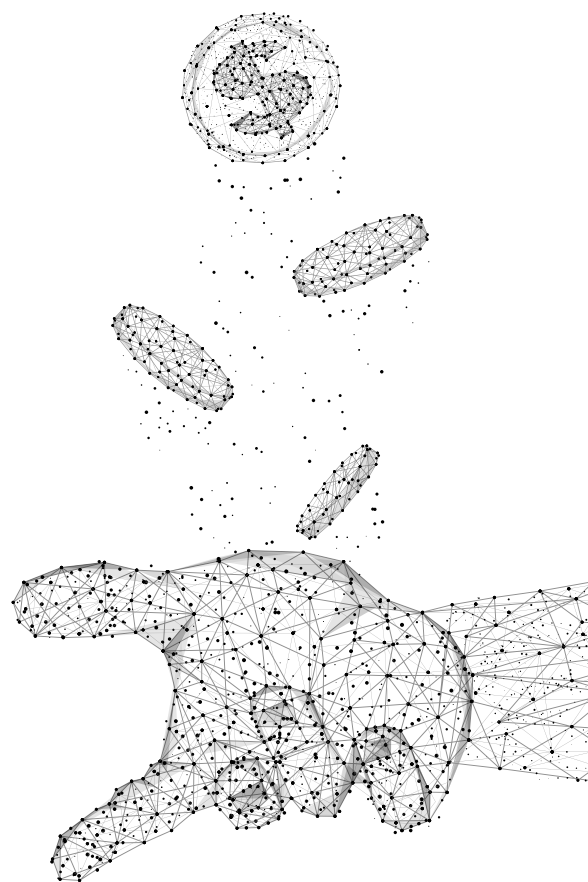
General search is a relevant market

We have described elsewhere how and why the CMA concludes that digital advertising is different from non-digital, and that “search advertising”—which is advertising shown to a user when she conducts a search on a search engine—is not a substitute for “display advertising”—which is advertising that appears on various websites as the user traverses the web. Search advertising responds to intent and encourages action by users who have affirmatively expressed an interest in a particular product, service, or topic (by conducting a search about it), whereas display advertising typically is used by advertisers to raise brand awareness and reach new audiences that match the demographic or other characteristics the advertiser selects. If, for example, a web user in Tucson needs dead fronds removed from a palm tree out back, she might do a search for “tree trimmers near me.” Her search results likely would begin with several “search ads” for local arborists or general yardwork companies. By contrast, if someone were to launch a brand-new tree trimming company in Tucson, that business owner might decide to also invest in display ads (relying on Google’s or Facebook’s ad tech services, for example) that targeted all Tucson

property owners and were displayed even on websites having nothing to do with palm trees (the *Arizona Daily Star*, ESPN.com, etc.), with the goal of bringing awareness of the new company to a broad audience.

Advertisers frequently launch campaigns that rely on both search and display advertising. But because the two types of advertising serve different purposes and are not substitutes, the CMA concludes that search and display advertising occupy different antitrust markets.¹² This means that if Google or someone else were to monopolize search advertising, the fact that the market for display advertising might remain competitive (with the expected concomitant low prices, high quality, and adequate choice) wouldn't ameliorate any competitive harms in search advertising. Even if display advertising were inexpensive and effective in its goals,¹³ an advertiser looking to target potential customers looking for a specific product or service at the moment they search for it still must rely on search advertising.

Search advertising is a "two-sided market" in that it serves both consumers on one side by providing them with search services, and advertisers on the other side with the attention of searching consumers. Google Search is the platform that brings the two sides together and creates profitable exchange. Although consumers do not pay a monetary price for their search, they pay in attention, so the transaction is one of barter. Advertisers, on the other hand, pay money for a click on a digital ad that it places in response to a particular search term. The network effects in this two-sided market operate in an asymmetric way. Consumers, of course, gain from other consumers making the same search on the same search engine because that will raise quality. Advertisers are also drawn to large numbers of consumers since that improves their match and reach. However, consumers do not materially gain from the existence of more advertisers on the platform. As a result, to the extent US courts treat Google as subject to the market definitions described in the 2018 Supreme Court decision *Ohio v. American Express* (addressing how to evaluate injury to competition in a two-sided market), it would compete with other search engines, just as newspapers compete with one another, despite both having advertisers with other choices of where to advertise. Google is not a transaction platform like American Express, but rather can be treated as a one-sided platform because the impacts of indirect or "cross-side" network effects between consumers and advertisers are minor, as with a newspaper.¹⁴ This is consistent with the benefits users get from a search engine.



¹² See CMA Report, *supra* note 5, at ¶ 15 ("Media agencies and most advertisers have told us that search and display advertising are not substitutable, mainly because they perform different roles. Search is intent-based advertising designed to encourage those consumers who have already shown an interest in buying the product to make a purchase, while display is suitable for raising brand awareness and reaching new audiences that might not yet have shown interest.")

¹³ We previously have argued that Google has monopolized the display market, and that display advertising therefore is neither as cheap nor effective as it would be in a competitive market. See Fiona Scott Morton & David Dinielli, *Roadmap for a Digital Advertising Monopolization Case Against Google*, OMIDYAR NETWORK (May 2020), <https://www.omidyar.com/sites/default/files/Roadmap%20for%20a%20Case%20Against%20Google.pdf>.

¹⁴ *Ohio v. American Express Co.*, 138 S. Ct. 2274, 2286 (2018) (internal citations omitted) ("To be sure, it is not always necessary to consider both sides of a two-sided platform. A market should be treated as one-sided when the impacts of indirect network effects and relative pricing in that market are minor. Newspapers that sell advertisements, for example, arguably operate a two-sided platform because the value of an advertisement increases as more people read the newspaper. But in the newspaper-advertisement market, the indirect networks (sic) effects operate in only one direction; newspaper readers are largely indifferent to the amount of advertising that a newspaper contains. Because of these weak indirect network effects, the market for newspaper advertising behaves much like a one-sided market and should be analyzed as such."). See also Fiona Scott Morton & David Dinielli, *Roadmap for an Antitrust Case Against Facebook*, OMIDYAR NETWORK (June 2020), <https://www.omidyar.com/sites/default/files/Roadmap%20for%20an%20Antitrust%20Case%20Against%20Facebook.pdf>; David Bassali, Adam Kinkley, Katie Ning & Jackson Skeen, *Google's Anticompetitive Practices in Mobile: Creating Monopolies to Sustain a Monopoly*, THURMAN ARNOLD PROJECT AT YALE (May 2020), <https://som.yale.edu/sites/default/files/DTH-GoogleMobile.pdf>.

Specialized search is a limited constraint on general search

Google and Bing in the US, and a few other platforms globally (such as Baidu in China and Yandex in Russia) offer what is called “general search.” The Google search engine scans the entire web and provides relevant responses regardless whether the user types a query about an historical event, sourdough bread, local emergency plumbing services, or the name of an upcoming blind date. There is a different kind of search product the CMA terms “specialized search.”¹⁵ Sites such as Amazon.com and Booking.com both have search functions that provide search functionality in specific areas. The Amazon search function will provide responses regarding products available through its e-commerce platform; Booking.com’s search function covers travel and will tell you about hotel rooms with two queen beds within 5 miles of Disneyland. These search engines, however, do not provide services outside of their specialty area, and so users will only turn to them when they have a specific need. However, because users turn to these platforms when they have a specific need, advertising to those users is often very lucrative. The user of Booking.com, by coming to the site, has revealed that she is serious about booking a hotel room in the near term. That user intent justifies the investment that often characterizes specialized search. The investment could be in better and more helpful user interfaces, delivery infrastructure, or sources of information like reviews that are particularly helpful to decision making and purchasing in the area of focus.

The CMA describes the interaction between these two different forms of search. The parent planning the trip to Disneyland might go directly to Booking.com or one of its competitors that also offers specialized travel search, she might go to Marriott.com, or she might just type her query into Google because that is what she is used to doing and the search will likely generate ads for both Booking.com and Marriott.com. The Google results from the query, “hotel five miles Disneyland 2 queen beds,” for example, yields a broad range of ads as well as organic results,¹⁶ though these may not be visible as they usually do not appear on the initial screen view (and on a mobile device may require scrolling down for some time). Google’s ads for this search may be purchased by Disneyland, nearby hotels like Marriott, and specialized search like Booking.com. Google may place a OneBox at the top of the SERP that features content it wants to highlight. The organic results may include links to articles about planning a trip to Disneyland, URLs for nearby hotels, and a link to an option on the Booking.com site.¹⁷

In this way, an individual specialized search engine competes with a small fraction of what the Google search engine does, because a user could employ either for one specific type of search. The CMA concludes that, from the consumer standpoint, a specialized search engine exerts only a limited competitive constraint on Google.¹⁸ We will return to this issue later in the paper.

General search is the gateway to specialized search and generates a large percentage of Google’s revenue

As the Disneyland hotel hypothetical suggests, general search often serves as a “gateway” to specialized search. The CMA notes that one of the reasons for this is that, from the consumer standpoint, relying on a general search engine reduces transaction costs. If the user is accustomed to simply opening her browser and typing in a query, she may default to that method for most or all her searches; typing “Booking.com” into the address bar may feel like an extra step, especially if she knows she can just click on that site from her search results.¹⁹ Thus, general search is an important pathway into the business of specialized search, while also competing with it.

The issue from a competition standpoint is two-fold, the first of which is straightforward. Consumers may think: why go directly to a specialized search site when using the Google search engine gets you to the same place with lower transaction costs? Additionally, consumers who have not used Booking.com before likely do not know they

15 CMA Report, *supra* note 5, at ¶ 3.9.

16 Google Search query for “hotel five miles Disneyland 2 queen beds,” GOOGLE SEARCH, <https://google.com>.

17 One of the results from the query in the immediately preceding footnote, for example, is a Booking.com site for the Anaheim Hotel near Disneyland. Anaheim Hotel, BOOKING.COM, <https://www.booking.com/hotel/us/anaheim-plaza-suites.html>.

18 CMA Report, *supra* note 5, at ¶ 3.40 (“Overall, we consider that specialised search providers are likely to provide only a limited competitive constraint to Google Search on the consumer side of the platform.”).

19 *Id.* at ¶ 3.37 (“[G]eneral search engines can lower transaction costs for consumers, by reducing the need for them to manually navigate between multiple websites and apps.”).

should go there directly. Of the examples we list, Amazon probably has the greatest brand name recognition, and is a site many consumers will navigate to directly when they want to shop. However, the CMA concludes that even this fact does not significantly diminish Google’s market power.²⁰

Second, we can see Google’s market power by the amount of advertising revenue it earns from this gateway function. As described above, Google serves ads for specialized search sites and lists specialized search in its organic links for the people who use it as a gateway. Because the consumers who click through have intent and the purchases are often large (e.g., travel, financial services, home repair), these advertising clicks are valuable. Google earns substantial revenue on searches that result in the user clicking an ad for a specialized search site.²¹ In this way, the main competitor of each specialized search business—i.e., general search—exact from it a payment in exchange for a critical input, traffic.²² Moreover, Google ads represent a substantial expense to the specialized search firm: as much as 50% of costs, according to the CMA.²³ “Google as Gateway” thereby blunts specialized search’s ability to constrain Google Search, rather than facilitating it.

Amazon is a small constraint in shopping

Amazon may be viewed as a behemoth in many ways, but the CMA concludes that, with respect to the search market, it operates functionally as a specialized search outlet. Booking.com may limit its results to travel-related reservations and services, whereas a search on Amazon.com gives a consumer access to virtually every kind of shippable good or downloadable material imaginable. Nonetheless, because Google Search provides search results regarding literally anything that can be found on the web, whereas Amazon limits its results to things that can be purchased or downloaded via its e-marketplace, the CMA concludes that Amazon meets only some, but not all, consumer needs. “Retail queries,” as the CMA calls them, are just one of many elements a consumer wants from general search. That, along with the fact that many consumers arrive at Amazon.com through Google Search as the gateway (resulting in Amazon’s relative disadvantage as compared to when the consumer visits Amazon directly), means that Amazon likely provides only a limited competitive constraint to Google.²⁴

20 *Id.* at ¶ 3.38 (“In practice, Google Search often serves as a gateway to specialised search rather than an alternative. As discussed in Chapter 5, there is some evidence that Amazon is less heavily reliant on Google than other specialised search providers and may compete directly with Google in relation to retail search advertising. However, retail queries only represent one element of what consumers want from general search. Overall, we consider that Amazon is likely to provide only a limited competitive constraint to Google Search on the consumer side of the platform.”).

21 *Id.* at ¶ 5.67 (“We note that some specialised search providers may be becoming more successful in generating their own traffic through promoting their brands and mobile apps, particularly as mobile usage has increased. However, in most cases they still appear to be heavily reliant on Google. For example, Booking Holdings has strong brands (Booking.com, Priceline, Kayak) and a large share of the online travel agency (OTA) market but still spends about half of its total global operating costs on performance marketing (primarily search advertising with Google).”).

22 Imagine a consumer who loves to shop at Etsy wants to know what kind of gloves Etsy sells. If she Googles, “etsy gloves,” the first item on her desktop results page is likely an ad, purchased by Etsy. Google Search query for “etsy gloves,” GOOGLE SEARCH, <https://google.com>. This ad may benefit both the consumer and Etsy but paying for it is an expense that benefits Google at the expense of Etsy.

23 CMA Report, *supra* note 5, at ¶ 5.67 (“We note that some specialised search providers may be becoming more successful in generating their own traffic through promoting their brands and mobile apps, particularly as mobile usage has increased. However, in most cases they still appear to be heavily reliant on Google. For example, Booking Holdings has strong brands (Booking.com, Priceline, Kayak) and a large share of the online travel agency (OTA) market but still spends about half of its total global operating costs on performance marketing (primarily search advertising with Google).”).

24 *Id.* at ¶ 3.38 (“In practice, Google Search often serves as a gateway to specialised search rather than an alternative. As discussed in Chapter 5, there is some evidence that Amazon is less heavily reliant on Google than other specialised search providers and may compete directly with Google in relation to retail search advertising. However, retail queries only represent one element of what consumers want from general search. Overall, we consider that Amazon is likely to provide only a limited competitive constraint to Google Search on the consumer side of the platform.”).

Syndicated search engines are partners not competitors

The CMA also examined business arrangements whereby the two biggest general search engines, Google and Bing, syndicate their search results to smaller search platforms. These smaller search platforms, such as DuckDuckGo, can then differentiate themselves from one another, and from Google and Bing, along parameters such as privacy protection or social purpose in ways that can exert some competitive pressure on Google. The syndicators also can layer additional content on top of the search results provided by Google or Bing.²⁵

The details of these business arrangements, however, make clear that the syndicators operate more like partners of Google or Bing, and exert little if any competitive constraint. The agreements provide for revenue sharing of any ad revenue the downstream partner earns at levels the CMA concludes are more likely to benefit the upstream provider by expanding its scope and scale more than they encourage the growth of the downstream but potentially horizontal competitor.²⁶ Moreover, the agreements give the upstream partner access to click-and-query data, which permits that upstream partner to fine-tune its search and ad-targeting abilities and cement its quality advantages. Finally, the agreements prohibit the downstream partner from re-organizing the search results in ways that might be responsive to consumer demands. For all these reasons, the CMA concludes that the syndicated search engines provide only “some fringe competition” to Google.²⁷

“Licensable smart mobile OS” is a relevant product market

Both the US and global markets for mobile OS’s have two major players: Apple’s iOS and Google’s Android. Globally, Android has a 73% market share compared to a 27% market share for iOS.²⁸ In just the US, Android has a 41% market share compared to 58% for iOS.²⁹ However, even this apparent duopoly might actually understate the competition Android faces. The European Commission finds that the true product market is for “licensable smart mobile OS”—one that excludes iOS due to its closed nature. Phone makers like Samsung—known as original equipment manufacturers (“OEMs”)—must license an OS to make their handset operate. As Apple designs its iOS exclusively for use with its own hardware, Samsung cannot license it. Therefore, from the perspective of OEMs, iOS does not create a competitive constraint on Android. Thus, the European Commission finds the relevant market to be “licensable smart mobile OS.” Android’s share of this market rises to 96%.³⁰

25 *Id.* at Box 3.3 (“At present, we understand that sources of differentiation include: • Social purpose — some syndicators spend part of their search advertising revenues on social or charitable causes. • Privacy — some syndicators say that they do not log or store information about user searches. • Search features — when users enter search queries, syndicators and their upstream partners alike often serve additional features (such as map extracts, news clippings and weather forecasts), alongside organic links and adverts. Some syndicators serve different features compared to their upstream partner.”).

26 *Id.* at ¶ 3.34 (“From the perspective of upstream providers, syndication agreements act as a distribution channel for their search results and adverts and help them to achieve greater scale. This may lead to direct benefits, in the form of revenue-share and other payments made by the downstream partner.”).

27 *Id.* at ¶¶ 3.34, 3.66, 3.68 (“Downstream search engines with syndication business models appear to provide some fringe competition to Google. However, we consider that competition to Google from platforms that do not produce their own organic links and adverts is likely to be limited in scope. . . . From the perspective of upstream providers, syndication agreements act as a distribution channel for their search results and adverts and help them to achieve greater scale. This may lead to direct benefits, in the form of revenue-share and other payments made by the downstream partner. In addition, these agreements help upstream providers to build greater scale in click-and-query data and in search advertising, which may in turn help the provider to improve its search relevance and search advertising monetization. . . . As the only at-scale English-language web-crawling search engines, Google and Bing will naturally have a strong bargaining position in discussions with downstream search engines. As a result, they may choose not to offer agreements to some providers, or may insist on terms that limit the ability of downstream providers to compete. For example, Ecosia said that it had approached Google many times over the years but that Google had always declined its request. In addition, none of the syndication agreements that we reviewed allows downstream providers to re-rank the search results that they received. Several downstream providers said that they would like to be able to modify search results, in order to improve their ability to differentiate.”).

28 *Mobile Operating System Market Share Worldwide May 2019–May 2020*, STATCOUNTER GLOBALSTATS, <https://gs.statcounter.com/os-market-share/mobile/worldwide>. In the same vein as the European Commission, discussion of a “global” or “worldwide” market specifically excludes China given the unique nature of that country’s mobile phone market.

29 *Mobile Operating System Market Share United States of America May 2019–May 2020*, STATCOUNTER GLOBALSTATS, <https://gs.statcounter.com/os-market-share/mobile/united-states-of-america>.

30 Case AT.40099—Google Android, Comm’n Decision, ¶ 446 (July 18, 2018), https://ec.europa.eu/competition/antitrust/cases/dec_docs/40099/40099_9993_3.pdf (“As shown in Table 3, Google has been the market leader since 2011 (when its volume-based share was 72%) and its share has since increased to 96.4% in 2016.”).

Market Power

Any analysis of potentially anticompetitive conduct must account for whether any of the firms operating within a market has market power, a term of art that refers to the extent a single company acting alone can raise prices or reduce quality without consequences. The sections above explained that general search constitutes a relevant market for such an analysis. The sections below confirm something that few would doubt—that Google has market power in general search and has held that power for many years.

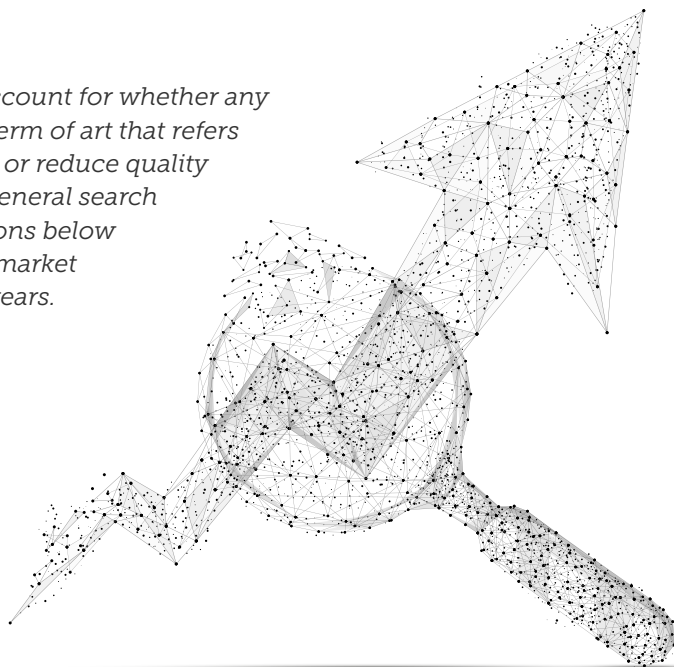
Google has high market shares

One way to identify market power is indirectly by measuring the market share of the dominant firm. Google easily satisfies this test with a share in general search that is both extremely high and stable, between 89% and 93% in the UK.³¹ Google's share of general search was slightly lower in the US due to the use of Bing on desktop computers. However, with the rise of mobile searches, Google's US share has been rising. Google's current share of the US general search market is 88%.³²

The CMA describes Google's share in two distinct ways. The first is the percentage share of all searches conducted through search engines. If five out of ten searches conducted on the internet occur through Google Search, then its share would be 50%. But of course, the percentage is much higher. The CMA reports that Google's share of searches has remained steady and exceedingly high—between 89%–93% for each of the last 10 years.

Because of a variety of business arrangements (some of which we describe below in the section of the paper describing anticompetitive conduct), Google and Bing have different shares in the desktop market than in the mobile market. Google bought default positions across a large swath of the mobile browser market, and therefore holds a 97% share of mobile search, but has only an 86% share of desktop search.³³ In contrast, Bing holds several defaults with desktop browsers,³⁴ which allow it to retain an 11% share of desktop search, but a share of less than 2% of mobile search. The bottom line, though, is that whether you look at general search as a whole, or segmented into mobile vs. desktop, Google's share is massive, with Bing serving the remainder of the market.

The CMA also calculates share based on the percentage of ad revenue generated by various search engines. Again, Google holds a dominant share. More than 90% of the total search advertising revenue in the UK is generated by Google. This is a significant figure. Search advertising is the largest segment of digital advertising in the UK—£6.4B in 2018. Ninety percent of £6.4B is £5.87B, a hefty sum indeed.³⁵ We know of no reason why an analysis by US antitrust authorities would arrive at significantly different conclusions about share.



31 CMA Report, *supra* note 5, at ¶ 3.17 (“Google has persistently had a very high and stable share of general search in the UK over the period for which data is available. As shown in Figure 3.3, based on Statcounter data on website referrals, Google’s share of supply has been between 89% and 93% throughout the last ten years.”).

32 *Search Engine Market Share United States of America May 2019–May 2020*, STATCOUNTER GLOBALSTATS, <https://gs.statcounter.com/search-engine-market-share/all/united-states-of-america>.

33 CMA Report, *supra* note 5, at ¶ 3.20.

34 Bing is owned by Microsoft, whose suite of Office products, along with its browser, default to Bing for search. Recently, Microsoft has rolled out Office products that actually change the search default on Chrome—Google’s browser—from Google Search to Bing. See Gregg Keizzer, *Opposition Grows to Microsoft’s make-Chrome-use-Bing plan for Office 365 users*, COMPUTER WORLD (Jan. 28, 2020), <https://www.computerworld.com/article/3518468/opposition-grows-to-microsofts-make-chrome-use-bing-plan-for-office-365-customers.html>.

35 CMA Report, *supra* note 5, at ¶¶ 16, 2.50 (“Google has had a consistently high share of the general search market for many years. Google has generated around 90% or more of UK search traffic each year over the last ten years and generated over 90% of UK search advertising revenues in 2018. The only fully independent competitor to Google in the core functions of general search is Bing, owned by Microsoft. Google also has a very strong position in various segments of the open display market. . . Search advertising is the largest category of digital advertising in the UK, with our estimates of total ad spend of £6.4 billion in 2018, of which we found Google earned more than 90%.”). These market definitions appear to include only general search providers, but the CMA notes that specialized search serves as only a limited competitive constraint on Google.

General search is a duopoly market

A second clear indicator of Google's market power is that it has only one competitor, Bing. The CMA's finding that general search is a duopoly supports the conclusion that Google has market power in search. Google's dominance in search has led to exit from, and consolidation in, the market, leaving behind just two viable competitors. The CMA examines the global market for search carefully and concludes that, to provide quality sufficient to compete with Google requires an English language engine with its own web index. It concludes that Bing is the only other at-scale English language index with its own organic results.³⁶

We noted above the enormous difference in scale between Google and Bing and the significant advantage that gives Google. In turn, Bing has scale advantages relative to a new entrant. Indeed, the CMA concludes that it is the only other product that offers similar functionality.³⁷

Google's reach is 95%

Google also has very broad "reach," meaning the percentage of internet users who use Google. This is another indication of market power. The CMA reports that a remarkable 95% of UK internet users visit at least one Google site every month.³⁸ We show below that Google acquired scale in search in large part through conduct that appears anticompetitive, including by entering exclusive agreements that prevented Bing from accessing potential users. Google's scale across its family of products provides it with a significant data advantage, especially with respect to location data that aids in targeting search ads and charging high prices for those ads.³⁹

Google's financial returns are above competitive levels

Google Search is wildly profitable, by any standard. This itself is an indication of market power. Economic theory predicts that competition in a competitive market should drive profits down to a competitive rate of return. The CMA analyzed public financial filings by Alphabet Inc., Google's parent, to demonstrate its increasing revenues for the parent company in the period from 2010 through 2018, as well as its increasing profit (measured using EBIT). It concluded that, in 2018, Alphabet Inc. earned over \$25B on close to \$140B in revenue worldwide. That profit margin supports a conclusion that Alphabet Inc., through its Google properties, has market power (worldwide), and because Google Search is so significant a property, the analysis would be consistent with a conclusion that Google Search has market power.⁴⁰ Because Google Search has been the dominant search engine in the US for at least a decade, Google Search in the US is likely to be even more profitable as a unit than suggested by this one-time snapshot of all of Alphabet Inc. from 2018.⁴¹

36 *Id.* at ¶ 3.52 ("In summary, Google and Microsoft are the only two providers that undertake English-language web-crawling and indexing at a scale that can support a competitive search engine in the UK. We consider that this reflects substantial scale economies in crawling and indexing, plus uncertainty for other search engines as to whether they can secure the other inputs (including sufficient scale in search queries and adverts) needed to earn a return on these investments. In combination, these factors represent a barrier to entry and expansion for English language web-crawling search engines.").

37 *Id.* at ¶ 3.52 ("In summary, Google and Microsoft are the only two providers that undertake English-language web-crawling and indexing at a scale that can support a competitive search engine in the UK. We consider that this reflects substantial scale economies in crawling and indexing, plus uncertainty for other search engines as to whether they can secure the other inputs (including sufficient scale in search queries and adverts) needed to earn a return on these investments. In combination, these factors represent a barrier to entry and expansion for English language web-crawling search engines.").

38 *Id.* at ¶ 2.14 ("In terms of reach, around 95% of UK internet users access at least one Google site each month. Facebook's reach is around 85%. Of the total time spent by users online, just over a third is on sites owned by either Google (including YouTube) or Facebook (including Instagram and WhatsApp).").

39 Scott Morton & Dinielli, *supra* note 13, at 15.

40 This conclusion might be conservative if profits in new markets are lower than profits in established markets.

41 CMA Report, *supra* note 5, at Figures 2.4 & 2.5.

The CMA also analyzed the return on capital for Google Search in particular, based not on public filings, but on private submissions Google made to the CMA. The CMA found that Google Search had a cost of capital of just 9% in 2018, but at least a 40% return on that capital.⁴² Based on these analyses, the CMA concluded that the return on capital for Google Search had been “well above any reasonable benchmarks for many years.” Indeed, the CMA concluded that the extraordinary profits and return on capital were not simply indicative of market power. The CMA goes even further, finding that the evidence is consistent with the “exploitation” of market power.⁴³

Google identifies Bing as its only competitor

Interestingly, the CMA notes that, in submissions made in connection with the Interim Report, Google itself could identify Bing and Bing alone as a competing search engine in the UK market. Those are the only two companies that can maintain at-scale English-language indices and produce their own organic search results that purport to scour the entire worldwide web.⁴⁴ When the largest competitor in a market can identify only one other competitor in its market, and the evidence shows that that large competitor owns a 90% share, it is reasonable to conclude it has market power.

Google now has over 96% of licensable mobile OS market because the other major supplier in this market, Apple, does not license iOS but rather bundles it with hardware.⁴⁵ The two share the mobile OS market as an almost global duopoly.⁴⁶ Despite its relatively large market share of handsets, the fact that iOS is not licensed out to other OEMs demarcates iOS from Android. OEMs find themselves faced with a market dominated by a single player—Google’s Android OS—with a near monopoly share.⁴⁷

Google has the power to degrade ad quality and user experience

Advertisers have an interest in their customers’ user experience when those customers use Google Search. Among other things, advertisers want to modulate the frequency at which their ads are shown to consumers so as not to irritate or oversaturate them. Advertisers may also care about the total number of ads consumers see, or the ease with which consumers can navigate past ads to locate organic results. It is in the advertisers’ interests to influence the user experience to ensure that users continue to come back to the search engine. But Google controls all the levers that affect quality and user experience. Google determines the total number of ads that appear in search results and how they are presented.⁴⁸ The CMA expresses concern that Google has increased the ad load on users over time.⁴⁹

A more subtle way Google could exercise power to affect user experience relates to the manner in which it conducts its auctions for ad space. Google conducts a second-price auction in which the winner is determined not just by the price bid for the impression, but also a “quality adjustment” determined solely by Google. The stated reason for this quality adjustment is that Google wants to serve relevant ads rather than irrelevant relevant

42 *Id.* at Figure 2.6.

43 *Id.* at ¶ 2.65 (“We have found through our profitability analysis that the return on capital employed for both Google and Facebook has been well above any reasonable benchmarks for many years. We estimated that the cost of capital for both Google and Facebook in 2018 was around 9%, whereas their actual returns have been substantially higher, at least 40% for Google’s search business and 50% for Facebook. This evidence is consistent with the exploitation of market power.”).

44 *Id.* at ¶ 3.29 (“Google submitted that Bing was the main competing general search engine to Google Search in the UK. Aside from Google, Microsoft is the only other search engine provider that maintains an at-scale English-language index and produces its own organic search results and search adverts.”).

45 Case AT.40099—Google Android, *supra* note 30, at ¶ 446 (“As shown in Table 3, Google has been the market leader since 2011 (when its volume-based share was 72%) and its share has since increased to 96.4% in 2016.”).

46 *Id.* at Figure 15 (showing that in 2016 iOS and Google Android had a 95% combined share of supply of smart mobile devices worldwide (excluding China)).

47 *Id.* at ¶ 446 (“As shown in Table 3, Google has been the market leader since 2011 (when its volume-based share was 72%) and its share has since increased to 96.4% in 2016.”).

48 For changes over time in Google ads, see Benjamin Edelman, *Google’s Advertisement Labelling in 2014*, BENEDELMAN.ORG (Oct. 13, 2014), <https://www.benedelman.org/adlabeling/google-colors-oct2014.html>.

49 CMA Report, *supra* note 5, at ¶ 5.82 (“Google determines the overall limit on the number of advertisements that can appear in search results and how these advertisements are presented alongside organic search results. It could exploit market power by crowding out organic search results with more advertisements that are shown more prominently, or in a way that makes them less distinguishable from organic search results. We note some evidence that Google may have increased the number of ads appearing in certain search results over time.”).

ads. It might determine, for example, that in response to a search for “roofers,” Google would rather serve an ad for a roofer and get paid \$1, than serve an ad for a plumber and get paid \$1.50. That is all well and good. The issue, though, is that Google makes these quality adjustments entirely on its own and with no visibility to advertisers. The CMA notes that Google could use the quality adjustment unfairly to manipulate price, for example by increasing the quality adjustment on the second bid to increase the price paid by the winning bid.⁵⁰ In addition, Google could simply decline to apply a quality-adjusted discount to the high bid, even if that high bid—had it been properly adjusted for quality and relevance—would not have won the auction. Google then would serve an irrelevant ad, which could degrade user experience. Because there is no visibility into the quality adjustment process, there is little advertisers would be able to do about such manipulations.⁵¹

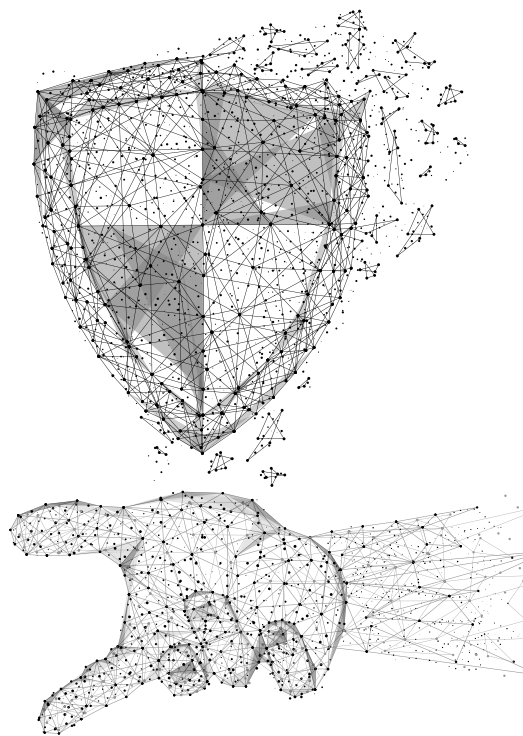
Barriers to Entry

In determining whether Google has or could exercise its market power in general search to the detriment of competition and consumers, we must also examine whether there are aspects of that market—either naturally occurring or resulting from Google’s conduct—that would make entry by a new competitor hoping to challenge Google’s dominant position unusually difficult. Economists call these “barriers to entry.” A market with barriers to entry is particularly susceptible to exclusionary conduct because existing or potential competitors, once excluded, face a high cost to re-enter the market. Barriers to entry in general search are significant, if not overwhelming, as described in the following sections.

Consumers single home per device

People who use search engines—in other words, the consumers of general search—tend to “single home” on each device, meaning that they generally use only a single search engine on their desktop computer and a single search engine on each of their mobile devices. This makes sense: a consumer who is running late to meet a friend for lunch and has forgotten the restaurant address is unlikely to take the time necessary in that moment to think about which search engine she wants to use to find the address. Instead, she opens her browser, which, if she has an unmodified Android or iOS handset, defaults to the Google search engine, and, without a thought, types in the name of the restaurant.

The CMA looked at evidence from the United States that confirms the instinctual notion that most consumers single home.⁵² With respect to desktop searches, 70% of US consumers use either Google or Bing exclusively, whereas only 30% report using both. Single homing is even more common when it comes to mobile search, according to the CMA, which helps explain Google’s extremely high share in mobile search.⁵³



50 *Id.* at ¶ 5.86 (“In auctions where there are multiple bidders that exceed the Ad Rank Threshold, the price paid by the winning bidder is determined by a function of the value of the second-highest bid and the quality adjustments Google makes to either bid. This may provide Google with flexibility to increase the price paid by the winning bidder, either by increasing the quality adjustment applied to the second bid or by reducing the quality adjustment applied to the first bid.”).

51 Indeed, Google could just serve an irrelevant ad for any reason or for no reason, although self-interest and the quality/scale/price feedback loop presumably would constrain such behavior at some point.

52 We note that consumer tendencies to single home are a natural feature of the market that Google itself did not create. But, as explained below in this section and the section about anticompetitive conduct, Google appears to have taken advantage of this feature of the market when it bargained for default positions that made all but certain that, when a consumer single homes, she will do so with Google.

53 CMA Report, *supra* note 5, at ¶ 3.21 (“Overall, the evidence we have seen suggests that many consumers mostly use one general search engine per device. For example, research by Google into the desktop sector in the US found that around 70% of consumers use either Google or Bing exclusively, and around 30% use both. Google’s very high share of supply in mobile search suggests that the proportion of consumers using only one search engine is higher still on mobile devices.”).

Google has a strong brand

The Google brand is remarkably strong, especially in search. Public reporting in the United States, for example, indicates that Google Search consistently enjoys the strongest, or nearly the strongest, brand loyalty of all US companies.⁵⁴ Its parent company, Alphabet Inc., uses the Google brand for over sixty customer-facing services,⁵⁵ though it is most strongly associated with search. Indeed, the word, “Google,” has long been synonymous with search, and even made its way into the Oxford English Dictionary as a transitive verb in 2006—fourteen years ago.⁵⁶ The CMA reports that even users of DuckDuckGo, a search engine that differentiates itself based on its stated commitment to privacy, use the word Google to mean “use a search engine to conduct a search on the web.”⁵⁷ Any new entrant would have difficulty gaining the sort of universal recognition Google Search enjoys, which the CMA identifies as a barrier to entry.

Google has website tags on 88% of sites compared to 1% for Bing

The CMA also identifies the broad prevalence of Google “tags” on UK websites as a barrier to entry. Google’s prominence in digital advertising means that it has a huge installed base when it comes to these tags. Web publishers place tags on their websites—code that activates a series of electronic interactions necessary for placement of digital display advertising. Tags also facilitate data collection by actors in the ad tech stack, including the firms that Google owns. If a user opens a website on her mobile phone and clicks on an ad placed via a Google tag, the tag, in addition to facilitating the placement of the ad, also makes it possible for Google to collect various data about the user, including location data. A consumer looking for Bluetooth speakers might do a Google Search that leads her to the website for an electronics store—say Best Buy. If Best Buy’s website has a Google tag, Google then may be able to use that information to prove what is called “attribution”—evidence that a search ad actually led to a purchase.

Attribution is very valuable information in the world of digital advertising; it permits the ad seller to demonstrate to advertisers the effectiveness of ads, which then drives ad buys and supports prices.⁵⁸ The CMA found that a whopping 88% of UK websites had Google tags, whereas only 1% of sites had Microsoft (Bing) tags.⁵⁹ This makes sense since Google Analytics and Google Ads, two major sources of tags, are widely used. Given the importance of measuring performance to advertisers’ decisions about how to allocate their ad spends, and the fact that Google has an overwhelming advantage in this regard due to the prevalence of Google tags, the CMA concluded that the advantage Google gains from the prevalence of its tags creates a barrier to entry.⁶⁰

54 See, e.g., *2019’s Top Brands Based on Customer Loyalty*, *MARKETING CHARTS* (Sept. 23, 2019), <https://www.marketingcharts.com/brand-related/top-brands-110227>.

55 Scott Morton & Dinielli, *supra* note 13, at 5.

56 Barry Schwartz, *Google Now a Verb in the Oxford English Dictionary*, *SEARCH ENGINE WATCH* (June 29, 2006), <https://www.searchenginewatch.com/2006/06/29/google-now-a-verb-in-the-oxford-english-dictionary/>.

57 CMA Report, *supra* note 5, at ¶ 3.27 (“The ‘Google’ brand is closely associated with the act of web-searching and several competitors highlighted this as a source of strength. DuckDuckGo submitted that users have come to expect Google as the default and think of it synonymously with search. Even die-hard DuckDuckGo users still say they “Google it.”).

58 For example, Google’s attribution metrics gives “last click” credit to its search ads, even if the buyer merely used Google’s search engine to navigate towards an already pre-determined purchase. Display ads on other sites that might have actually induced the purchase thus appear to be ineffective. See Scott Morton & Dinielli, *supra* note 13, at 29, n. 123.

59 CMA Report, *supra* note 5, at ¶ 5.75.

60 *Id.* at ¶ 5.75 (“Advertisers also told us that Google had an advantage from better synchronisation with Google Analytics, allowing for better measurement and attribution of advertising performance than Bing. Microsoft told us that Google had additional advantages in measuring effectiveness from the prevalence of its online Tags and from its mobile data that allowed it to measure offline conversion in the form of store visits (in addition to deals it had negotiated with third parties such as credit card providers). It pointed to publicly available research indicating that Google tags (ie Google Analytics, Google Ads and Floodlight tags) cover about 88% of UK websites, whereas Microsoft’s tags cover less than 1% of UK websites. Given the importance of measured performance in driving advertisers’ decisions on how to allocate expenditure in search advertising, in our view it is highly likely that these advantages would create a barrier to entry for potential rivals.”).

Google benefits from scale and indirect network effects

Google's scale—meaning the sheer numbers of its users and the searches they conduct—presents a barrier to entry. As we described in the business model section of the paper, from the standpoint of the consumer, a principal feature of quality is what is called "relevance"—i.e., whether the results of a search match what the user is looking for. Search engines fine tune their search algorithms using "click-and-query" data. Observing whether a search based on a particular query yields results that a user actually clicks, and which results actually generate those clicks, helps the search engine refine its search methods and results. The more click-and-query data the search engine can collect—especially with respect to searches where diminishing returns are not yet significant—the better the search engine becomes at providing the user with relevant results.

The CMA collected evidence showing that consumers view Google's search results, on the whole, to be more relevant than Bing's, which reflects Google's tremendous scale advantage.⁶¹ The superior relevance of Google results is especially apparent in what the CMA terms "tail queries," which are unusual queries. A search engine with greater scale will be able to improve its answers to tail queries, and this is why Google has richer local and specialty results than Bing.⁶² In economics, the benefit that one consumer gets because other consumers use the same search engine is termed "indirect network effects." Although those consumers are not directly connected, the benefits they receive from using the search engine are linked through the search engine's ability to improve relevance by serving all of them. Network effects are a well-known barrier to entry.

Because of the direct connection between scale and quality, it would be necessary for a new entrant hoping to match Google's overall quality in search to grow to a similar scale (assuming no groundbreaking technological advance). The CMA therefore identifies Google's scale advantage as a barrier to entry.⁶³

Google has access to location data (from the Android Operating System, Google Maps, and other apps)—a key entry barrier for advertising

Location information also is critical to Google's ability to serve well-targeted search ads and charge high prices for those ads. Whereas demographic and other group membership information has particular value in display advertising (the hypothetical landscaping company trying to grow its brand would rather target people who own homes with yards than people who live in studio apartments), precise, real-time location information has particular value in connection with search advertising.⁶⁴

A local donut shop, no matter how good its donuts, ideally wants to serve ads to people who are (a) hungry for donuts (as evidenced by, for example, a search for "donut shops"); and (b) within only a short distance from the shop *at the time they are hungry for donuts*. Knowing the precise location of the potential customer at the time she searches for "donuts" is far more valuable than knowing where she lives or where she was yesterday. It also is more

61 *Id.* at ¶ 3.26.

62 *Id.* at ¶¶ 3.26, 3.46 ("As discussed above, relevance of results is widely viewed as the most important aspect of quality for consumers. Relevance is subjective and there is no single measure that is used across the sector to compare different search engines. However, the evidence that we have reviewed to date, which includes internal documents and consumer research submitted by parties, suggests that consumers generally view Google's English-language search results as being more relevant than those of other search engines. For example: Google submitted UK consumer research in which Google Search results were rated more highly than those of other search engines, including in relation to 'random queries'; Google also submitted research showing that a sample of US consumers had identified 'quality and relevance', along with 'familiarity and habit', as their top reasons for using Google Search; Microsoft submitted internal documents stating that Bing was 'trailing' Google on relevance in a number of regions outside of the US; Microsoft told us that Google's perceived advantage on relevance among consumers especially applies to uncommon queries (also known as 'tail queries') and that Google has richer local and specialty results. Tail queries account for a significant proportion of the traffic seen by search engines. For example, Google said that about 15% of its daily traffic is comprised of queries that it has never seen before; Microsoft submitted qualitative research that indicated that the perceived relevance of results was a source of relative weakness for Bing in the UK. This study was based on discussions with a small number of Bing users. . . . Developing a web-index is subject to economies of scale; the costs associated with crawling and indexing do not increase proportionally with the number of users of the search engine. It is difficult for smaller search engines to invest in at-scale crawling and indexing, since their ability to repay these costs and earn a return on investment is contingent on their ability to secure the other inputs necessary to compete effectively in search. For example, they would also need to achieve scale in both search queries and search advertising, in order to offer relevant results and monetise effectively.")

63 *Microsoft, supra* note 6, at 49.

64 *Id.* at ¶ 5.53 ("As search advertising is targeted on keywords which relate to specific consumer search queries, audience targeting is incrementally less valuable than in display advertising.")

valuable than knowing general demographic data such as whether she owns a home or votes Republican—the sort of information that might be valuable in a display campaign.

Google has a tremendous advantage when it comes to location information. It knows where its users are if they are using an Android device because the operating system of the device constantly reports the user's location. Google may also know iOS users' location if they have open apps that reports to Google such as Google Maps or Waze (a driving direction app that Google acquired).⁶⁵

Moreover, the CMA notes that this advantage in location information appears to be growing over time. The proportion of searches on mobile devices is growing relative to the proportion of searches conducted on desktops and laptops. Because Google holds a default position on nearly all mobile devices, the increasing percentage of search advertising that is served to mobile devices (and the revenue those ads generate) necessarily will benefit Google and further disadvantage its rivals.⁶⁶ In other words, Google's location data advantage is not just an entry barrier, it is one that becomes more and more difficult to overcome over time. This barrier is further exacerbated by Google's acquisitions of assets that could help competitors obtain better location data.

Google has access to user data taken from the Android operating system and other Google services

Valuable user information in addition to location information can be collected from users' browsing histories, search histories, calendar entries, and Gmail. Google data use policy—the text to which users click, "I agree"—in combination with its many consumer-facing properties, gives the company enormous latitude in measuring everything users do, and therefore a significant advantage over competitors. Google gathers some of this information directly from the Android operating system, some from tags placed on third-party sites and apps, some from its own family of apps and other products, and some from acquisitions such as Waze or, presumably, Fitbit. Advertisers and media agencies told the CMA that Google's trove of data allows Google to offer in-depth targeting options that its competitors cannot. The CMA therefore concludes that the inability of a small competitor or new entrant to access the same amount or quality of user data creates a significant barrier to entry.⁶⁷

Google has a web index that is 500–600 billion pages

Search engines provide users access to web pages by (1) "crawling" the web in search of pages that can be indexed and made available as responses to search queries; and (2) "indexing" cached versions of those pages so that they quickly can be retrieved and presented in response to search queries. This is no easy feat, and the literature is replete with explanations of the technological challenges these tasks present and how search engines have overcome them.⁶⁸ The bottom line, however, is that Google has indexed far more pages than any other search engine. The CMA estimates that Google's index contains 500–600 billion pages. The Bing index is significantly

65 *Id.* at ¶ 3.71 ("Microsoft suggested that accessing at-scale location data from user devices is a critical input to providing relevant, localised results. It indicated its belief that Google has unique advantages in this area, due to the location data that it receives from the Android operating system and the location data it receives when users access Google Search or other apps like Google Maps/Waze. As noted above, Google Search accounts for almost all of the mobile search sector in the UK (97%).").

66 *Id.* at ¶ 5.60 ("Finally, our analysis of market outcomes shows that there has been a substantial shift over time from advertising delivered to consumers on desktop to advertising delivered to consumers on mobile. This is consistent with other market reports we have seen and reflects the underlying increased usage of mobile devices. We note that this shift may benefit Google over its rivals, due to Google's default status on nearly all mobile devices. The continuation of this trend would mean that Google is able to gain an increasing overall share of search queries and advertising revenues as well as gain an advantage over rivals from the data it can gather from mobile devices.").

67 *Id.* at ¶ 38–39 ("Google collects a vast amount of user data from three main sources: its user-facing services (it provides over 50 such services, including search and Gmail); mobile devices running Android, Google's operating system; and from the analytical technology they place on third-party sites and apps (known as tags). Facebook gathers user data from the three main services it provides in the UK (Facebook, Instagram and WhatsApp) and from Facebook analytics technology placed on third-party sites. . . Advertisers and media agencies have told us that Google offers in-depth targeting options, driven by its unique and vast sources of data, while Facebook has the advantage of offering the ability to target specific audiences based on demographic characteristics, interests and location. This creates a substantial competitive advantage for Google and Facebook, both of which have access to more extensive datasets than their rivals. **The inability of smaller platforms and publishers to access user data may therefore create a significant barrier to entry.**").

68 See, e.g., Abhishek Das & Ankit Jain, *Indexing The World Wide Web: The Journey So Far*, GOOGLE RESEARCH (2012), <https://static.googleusercontent.com/media/research.google.com/en//pubs/archive/37043.pdf>.

smaller, at 100–200 billion pages. However, the number of pages indexed does not necessarily translate into high quality from the user perspective. The engine’s ability to select relevant pages from that index affects the user experience. So too does the search engine’s ability keep its index current; a search result that sends the would-be donut eater to a shop that closed a year ago is unhelpful. But other things being equal, it is much better to have a larger index than a smaller one. Google’s index, which is the largest by far, therefore presents a barrier to entry.⁶⁹

Google’s vertical integration allows it to seek cover under the GDPR

The CMA also reports concerns that privacy regulation in the European Union, and in particular the EU’s General Data Privacy Regulation (“GDPR”), may serve as an entry barrier.⁷⁰ In the previous sections we explained how Google’s data advantage, derived from its control of dozens of consumer-facing products and various service providers in the open display market, presents a barrier to entry. According to the CMA, the GDPR’s limitations on the sharing of personal data may act as an entry barrier by advantaging large vertically integrated firms that offer a variety of products and services through which they can collect and also use consumer data.⁷¹ Google and other large platforms assert that they are permitted under the GDPR to collect data and only share it with subsidiaries within the same corporate family (even though those subsidiaries perform different functions), but that they would not be able to share that data with competitors or data brokers outside the corporate family.⁷² Although it is not obvious that Google or the other large platforms *would* share their data were it not for the GDPR (or at what price), what is clear is that the GDPR has given Google cover to keep its data entirely within its own family of companies, claiming this protects user privacy. Because of this, the CMA cites concerns that the GDPR is itself creating a barrier to entry, in that its rules against data sharing effectively entrench Google’s data advantage by favoring large,

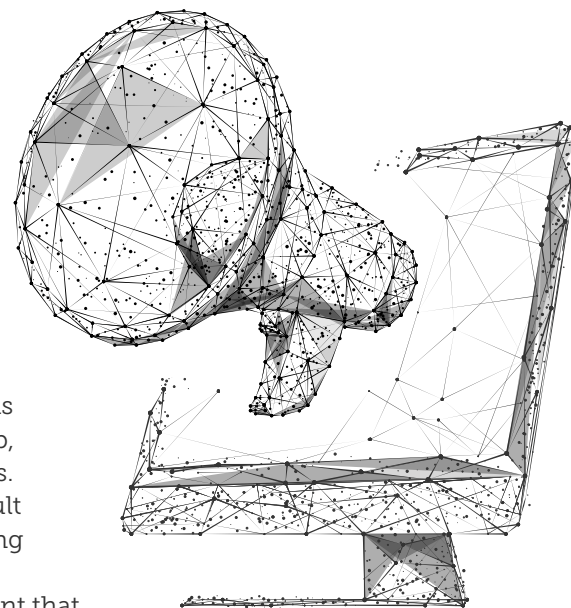
...the GDPR has given Google cover to keep its data entirely within its own family of companies, claiming this protects user privacy. Because of this, the CMA cites concerns that the GDPR is itself creating a barrier to entry, in that its rules against data sharing effectively entrench Google’s data advantage...

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- 69 CMA Report, *supra* note 5, at ¶ 3.44 (“Based on submissions from these parties, Google’s index contains around [500-600 billion] pages and Microsoft’s index contains around [100-200 billion] pages. Our understanding is that the total number of pages in a web index is only one measure through which indices can be assessed; the relevance of the pages in an index is also important, as is the extent to which an index is up-to-date.”).
- 70 *Id.* at ¶ 42 (“We have also heard views that that aspects of the design and interpretation of data protection regulation risks creating competition concerns by **entrenching these data advantages and favouring the business model of large, vertically-integrated platforms over smaller, non-vertically-integrated publishers.**”).
- 71 *Id.* at ¶ 43 (“In principle, the General Protection Regulation (GDPR) makes gaining and managing consent within a ‘walled garden’ to deliver a particular purpose, an easier exercise than sharing data between firms to deliver the same purpose. Large, vertically-integrated platforms such as Google and Facebook may therefore have an easier task in obtaining consent from consumers to use their data for personalised advertising compared with publishers such as newspapers involved in the supply of display advertising in the open market.”).
- 72 Scott Morton & Dinielli, *supra* note 13, at 28. See also *Understanding the Digital Advertising Ecosystem and the Impact of Data Privacy and Competition Policy: Hearing Before the S. Comm. on the Judiciary*, 116th Cong. (2019) (Written Testimony of Dr. Johnny Ryan, Ph.D. Chief Policy & Industry Relations Officer, Brave), <https://www.judiciary.senate.gov/imo/media/doc/Ryan%20Testimony.pdf>.

vertically integrated platforms that can fully exploit user data without sharing over smaller ones that cannot monetize data on their own.⁷³ To the extent that companies might use this argument to justify conduct in the US, it is even more clearly pretextual because the US is not subject to the GDPR.⁷⁴

Google benefits from default bias on the part of users combined with default or preferential placement or pre-installation of browser, search box, and search engine

The CMA notes that, because of its position as the dominant search engine, Google has been able to negotiate default or preferred position advantages with leading device manufacturers and browsers. That means that, unless the user takes affirmative steps to change the configuration on her new device, searches on her laptop or mobile device will run through the Google search engine. As we noted above, users tend to single home *and* they suffer from “default bias,” meaning they are unlikely to change default settings. According to the CMA, Google’s extensive preferred and default positions across the desktop and mobile landscape—which is something Google acquired through contracts (which may have been anticompetitive)—combined with the tendency of consumers (who suffer from default bias) to single home, presents a significant barrier to entry. Bing has some scale because it has been able to pay PC makers to be the default.⁷⁵ The CMA also offers additional reasons default positions are so important and give Google such a significant leg up, in addition to the tendency to single home and the existence of default bias. According to the CMA, users may not even know they can switch the default or pre-installed search engine in a browser or on a device. Second, changing to a rival app may be complex or daunting, perhaps intentionally so. Third, consumers may see little benefit in changing because Google is so dominant that competitors and their features are not well understood. Finally, software updates oftentimes reverse consumer selections; they force a “default to the default,” which can cause frustration on the part of users and deter subsequent changes from the default.⁷⁶ This last allegation is particularly concerning, as it seems to be a way that Google can leverage its dominance in the operating system and app store, which control software updates, to protect its power in search.



73 CMA Report, *supra* note 5, at ¶ 42.

74 For more on this discussion in the US, see Charlotte Slaiman, *Data Protection is About Power, Not Just Privacy*, PUBLIC KNOWLEDGE (March 3, 2020), <https://www.publicknowledge.org/blog/data-protection-is-about-power-not-just-privacy/>.

75 As mentioned above, Bing has default desktop positions, which is one of the reasons its market share is greater for desktop search than it is for mobile. The CMA reports that, in the UK, Bing holds default positions on all Windows PCs, as a result of agreements negotiated by Microsoft. CMA Report, *supra* note 5, at ¶ 3.78 (“In relation to desktop devices, Microsoft pays Windows PC manufacturers to pre-install Microsoft web browsers which have Bing set as the default search engine.”). Bing’s agreements cover a small enough share that, on their own, there would be plenty of traffic supply for an entrant. However, Google’s market share of defaults fills that space.

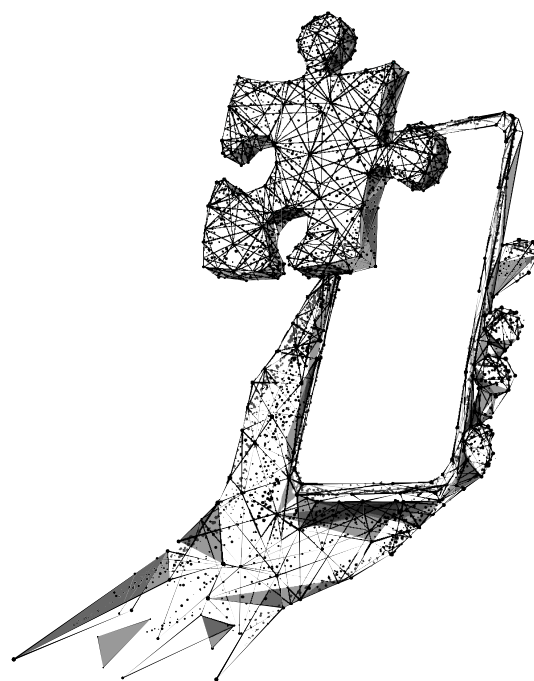
76 *Id.* at ¶ 31, 3.75, 3.85 (“We consider that Google’s extensive default positions across very large parts of the desktop and mobile landscape act as a barrier to expansion for other search engines, making it more difficult for these providers to grow their user bases and improve their search quality and search monetisation rates. In addition, there is likely to be a positive feedback loop between Google’s position as the largest search engine and its ability to acquire extensive default positions that further reinforce this position. . . . In their submissions to the CMA, a range of search engines indicated that defaults play an important role in influencing consumers’ usage of search engines. . . . The influence of defaults in general search is likely to be underpinned by several factors. Firstly, consumers may not understand that they can change the default search engine on a device or in a browser. Secondly, they may be put-off by complexity or other hassle factors. For example, Ecosia told us that Google displays a warning notice when consumers seek to change the default search engine in Chrome or on Android devices and that this discourages consumers from following through with a switch. Thirdly, consumers may perceive little benefit to changing defaults, especially if the default search engine is the market leader (Google) and the alternatives are not well understood. Finally, when consumers do seek to change the default search engine on their browser or device, their choice may be reversed following software updates.”).

Defaults are entry barriers and re-enforce Google's market power

As explained above, Google likely paid less than its value for its various default positions because its competition has a lower ability to monetize searches. The CMA notes that, relatedly, Google's default position helps to cement and grow its dominant position in general search.⁷⁷ Google's Android contract has required that Google Search be the default engine that opens at every "access point," which operates like an exclusive.⁷⁸ The bundling required by Google also contributes to entry barriers by requiring that if the OEM wishes to install the Play Store, it must also install Google's suite of high value apps such as Google Search and Google Chrome. The CMA calls this a "feedback loop," whereby Google obtains default or preferred positions, which generate valuable data, help increase its share, and the increased share then helps Google obtain even more default positions.

Google values these default positions highly (even if it may have paid less for them than it would have had to pay in a competitive market). In 2018, Google paid \$1.3B to obtain default positions in respect of UK consumers, which was 16% of its total UK search revenue.⁷⁹ Google asserted to the CMA that it competes for these default positions, at least with respect to mobile, on the basis of its quality.⁸⁰ This explanation strikes us as suspect; if the Google Search quality really is superior, why would Google need to pay to be a default? Consumers would surely choose to use Google regardless. But whether Google may be paying billions for the opportunity to gain the default position because that is what the economics demands, or whether, instead, Google is paying billions to make certain that Bing does not obtain the default position in mobile, one thing is clear. This interaction between Google's already dominant share and its default positions is valuable to Google and serves an independent barrier to entry.⁸¹

...Google's default position helps to cement and grow its dominant position in general search.



77 We know that default positions provide a significant competitive advantage and serve as an entry barrier in part due to a sort of "natural experiment" in Russia. Yandex is a high-quality Russian-language general search engine. Google entered the market, secured a number of valuable default positions, and rapidly began stealing market share from Yandex. Russian competition authorities acted quickly and obtained a settlement that required Android users be presented with a neutral choice screen by which they could select which search engine they wanted to use. Yandex quickly regained market share as a result, and the relative market shares of Google and Yandex have been stable since then. In short, the mere prohibition of Google's defaults helped restore competition. See Matt Stoller, *How Russian Antitrust Enforcers Defeated Google's Monopoly*, BIG ISSUE (July 23, 2019), <https://mattstoller.substack.com/p/how-russian-antitrust-enforcers-defeated>.

78 Case AT.40099—*Google Android*, *supra* note 30, at ¶ 185.

79 CMA Report, *supra* note 5, at ¶ 3.81 ("Secondly, the high level of default payments, known as 'traffic acquisition costs', made by Google in particular demonstrates that it values these default positions highly. In 2018, for mobile devices alone, Google paid around \$1.3 billion USD for default positions in respect of UK consumers. This was around 16% of Google's total annual UK search revenues.")

80 *Id.* at ¶ 3.87 ("Google indicated that the level of revenue share payment that it offers was a secondary consideration for mobile phone manufacturers and mobile phone networks and that it primarily competes for default positions on the basis of search quality.")

81 *Id.* at ¶ 3.88–3.89 ("Overall, we consider that Google's ability to conclude default agreements across very large parts of the desktop and mobile landscape acts as a barrier to expansion for other search engines, making it more difficult for these providers to grow their user bases and improve their search quality and search monetisation rates. . . In addition, we consider that there is likely to be a positive feedback loop between Google's position as the largest and most revenue-generating search engine and its ability to acquire extensive default positions that further reinforce this position.")

Access to consumers would be expensive for a new entrant

The CMA describes the cost of accessing consumers as a barrier to entry, which is a catch-all for some of the more specific market features we have described above. We have provided a number of reasons why it is difficult or expensive to access consumers. Google and Bing have, collectively, obtained default positions that cover the vast majority of desktop and mobile. To gain access to consumers, a new entrant would need either to launch a marketing campaign that was sufficiently effective (and presumably expensive) to cause consumers, in large numbers, to overcome their default bias in order to negotiate successfully the complex processes required to disable the default. Even if a new entrant convinces a cohort of users to change their defaults, that new entrant would need to provide sufficiently relevant results to keep them (especially when software updates defaults them to the default), and we have explained above why it is difficult to present relevant responses without scale.

The most direct route to consumers for a new entrant would be to purchase default positions, but this could be prohibitively expensive. The CMA describes Google's payments to Apple in exchange for default positions as "very large." We have noted above that Google paid \$1.6B in 2018 in the UK but \$12B globally. Economic theory predicts that the price for the most valuable defaults, such as Apple mobile, would be even higher if a new entrant began bidding for those default positions as well. In this way, the cost of access to consumers—considering all of its elements—is a barrier to entry.⁸²

Google has exclusive contracts with Apple, android handset makers, and mobile networks that deter entry

We have discussed the role of defaults above,⁸³ but not exclusive defaults. A default position on a device refers to locating the app in question on the home screen or front page, but, in principle, both Bing and Google Search could be pre-installed in that location. An exclusive default occurs when only one app in a category is pre-installed on the device. This contract term prevents the OEM from including a rival search engine in a less favorable location. If a rival is somewhere on the device, a user does not have to install it herself, though she does have to swipe through a few pages of apps to find it. By contrast, an exclusive default forbids the handset maker from installing *any* competing app on the device in any position. Clearly, if consumers find installation difficult, this contract will deliver even more market share to the buyer of the exclusive default, so it will be worth more.⁸⁴

Network effects act as a strong barrier to entry in licensable mobile operating systems

An app store creates valuable functionality for an operating system. App stores "work as distribution channels, allowing users to search for and download a wide array of other apps."⁸⁵ Consumers have low value for a device (and operating system) that does not enable the apps they find most useful. But persuading app makers to write a version of an app for a new operating system requires those app makers to believe there will be many consumers using that operating system. As was well established in the Microsoft case, applications can form a barrier to entry in this situation. Thus, entering with a competing mobile operating system would require overcoming this barrier.⁸⁶

82 *Id.* at ¶ 3.15 ("However, competition over access to consumers is also a very important feature of the search sector. For example, Google makes very large payments to Apple in particular in return for being the default search engine on its devices.")

83 *Id.* at ¶ 3.76 ("Google owns the popular web-browser Chrome, which has Google Search set as the default search engine. Google has also negotiated default agreements with Apple and with many of the largest Android mobile phone manufacturers and mobile phone networks. Google pays a share of search advertising revenues to these partners in return for Google Search occupying the default search positions on devices.")

84 Both Apple and Android phones come preinstalled with a host of Apple and Google apps, respectively. Android generally allows more customization of defaults than Apple. Alternatives to Apple's voice assistant Siri and email client Mail can be downloaded but cannot be set as overriding defaults. Jason Cipriani, *Sorry iPhone: Android wins at these 7 things*, CNET (June 15, 2020), <https://www.cnet.com/how-to/sorry-iphone-android-wins-at-these-7-things/>.

85 Case AT.40099—*Google Android*, *supra* note 30, at ¶ 271.

86 *Microsoft*, *supra* note 6, at 55.

Problematic Conduct

US antitrust law does not condemn monopolies per se. So long as a monopolist achieved its dominant position through innovation, for example, it is free to reap the benefits of its success, including by charging the prices the market will bear. What US law does prohibit is “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.”⁸⁷ This section examines conduct that appears to have crossed the line from business acumen to willful acquisition and maintenance, in violation of US law.

1. Defaults and exclusive contracts

Once it is clear how Google’s margin is determined, the strategy of the large search engine is obvious: deny scale to the smaller search engine. When Google was competing in search before the rise of mobile, it was critical for Google to keep volume away from its competitor, Microsoft.⁸⁸ Any increase in the scale of Microsoft’s search engine, or a smaller search engine competitor more generally, would have lowered Google’s take rate, even if it did not alter the level of Google’s profit per search. In this setting, Google would have been willing to pay *more* than the search traffic was worth in direct profits in order to prevent Microsoft’s search engine from catching up to it in size.

The CMA describes a defensive intent to Google by explaining that the rationale was to maintain Google’s position in search.⁸⁹ Among the traffic deals that were important in this time period were those with portals, wireless carriers, handset makers, and large publishers.⁹⁰ In 2006, Google announced it would pay AOL a rich price that observers interpreted as motivated by the desire to keep traffic away from Microsoft; that price included an equity stake of \$1B for a 5% stake in AOL, giving the company a \$20 billion valuation. This was despite the fact that AOL was hemorrhaging subscribers so quickly as to be deemed a negative asset to then-parent Time Warner.⁹¹ Just two years later, Google sold AOL back to Time Warner for a mere \$283m.⁹²

An early handset deal that was important for keeping search volume away from Microsoft was the Google Search default upon launch of the Apple iPhone. This contract had a particularly important impact because Apple’s users were numerous, relatively wealthy, and disproportionately active on the internet.⁹³ At the time of

87 *United States v. Grinnell*, 384 U.S. 563, 571 (1966).

88 CMA Report, *supra* note 5, at ¶ 3.86 (“Several providers told us that they were unable to compete with Google for default positions due to the scale of payments required. Microsoft suggested that Google has been able to secure default placement on Android and Apple devices and that this was likely due to its ability to share large amounts of search revenues resulting from its market position in search.”).

89 *Id.* at ¶ 3.80 (“Firstly, we have viewed internal documents submitted by Google which suggest that at least part of the rationale for entering into default agreements is to make Google’s search advertising revenues more secure. For example, an internal document referred to search advertising revenues as being ‘exposed’ where these came from mobile devices for which Google did not have a default agreement in place.”).

90 Ina Fried, *Verizon, Microsoft in mobile-search deal*, CNET (Jan. 7, 2009), <https://www.cnet.com/news/verizon-microsoft-in-mobile-search-deal/>.

91 Charles Arthur, *The spoilers of war*, THE GUARDIAN (Dec. 22, 2005), <https://www.theguardian.com/technology/2005/dec/22/newmedia-city> (“When it came to crunch time to make a deal, [Schmidt] knew that he had to bring home a Google victory,’ explained Alan Meckler of Jupiter Research. ‘He knew that Google could not allow a Microsoft-AOL alliance and figured out a way to beat Microsoft. He knew that a Microsoft victory would jumpstart Microsoft’s efforts at selling AdWords. He was willing to bend and allow AOL certain advertising placement advantages on Google in order to secure the deal.’ And the deal was essential to Google’s survival because AOL’s users are a prime source of its revenue and profits. Google remains the search engine underlying AOL, a partnership that generated \$420m of advertising revenue for Google in the first nine months of 2005, about 10% of total income, and its biggest single source of revenue.”).

92 Nancy Gohring, *Google sells AOL Stake at \$717 Million Loss*, PC WORLD (Jul. 27, 2009), <https://www.pcmag.com/article/169140/article.html>.

93 Case AT.40099–*Google Android*, *supra* note 30, at ¶ 119 (“For example, in 2007, Google entered into an agreement with Apple whereby Google Search became the default general search service on all Apple’s smart mobile devices since the launch of the iPhone. In 2010, Google Search accounted for more than half of the traffic on the iPhone and almost a third of all mobile Internet traffic.”).

that launch, Eric Schmidt served on both the boards of Apple and Google.⁹⁴ Google's search engine appeared as the default on the iPhone in 2007 and continued to be the default through the present day in the United States and Europe.

The value of this default to Google was very high both because it kept volume away from competitors as well as created the "virtuous circle" of higher entry barriers in mobile, then a booming area for search. Further evidence of the value of the default position on the iPhone can be seen by the amount that Apple was able to extract by selling the exclusive default position (\$12 billion globally in 2019).⁹⁵ It is an open question how much market share Apple could shift if it were to try to move its users away from Google; the cost to Google of this default is 16% of its search revenue on iOS, which may provide a clue. Data from desktop users where Microsoft's Bing is easily accessible in the browser and therefore competition is less skewed, shows Bing to have about a 13% share.⁹⁶ The market price of keeping Microsoft out of iPhone searches thus appears to be very similar to the share that Google Search might lose should it compete today with Bing (taking past actions as given).⁹⁷ This is consistent with economic theory when the marginal cost of showing an ad is zero, as it is on Google's own SERP. It is possible that the scale of these payments could keep out rivals; and Google had both the incentive and the ability to use them in that fashion. An open question of interest is whether these payments were profitable absent their impact on Microsoft's scale and relevance.

The nature of exclusive arrangements is such that their potential competitive danger increases as the market shares of either or both of the parties to the exclusive agreement increase. If a dairy that produces 80% of the milk in a particular geographic market convinces a grocery store chain with an 80% share in that same market to sell its milk exclusively, that arrangement would have a greater potential to harm competition from new dairies than if an existing dairy in that same market with only a 5% share of supply convinced a single corner grocer to sell that small dairy's milk exclusively.⁹⁸ In a similar way, Google's exclusives would cause greater concern once it had gained a 50% market share as opposed to 5%. The exclusives certainly raise alarms once Google had achieved a 90% share, as it has maintained for years. The arrangements that Google secured over time demonstrate this concept: the exclusive arrangement Google secured with Apple and that has lasted well into the years of Google's dominance of search and Apple's prominence in the US handset market presents a competitive concern.

But there is another dynamic at play here as well, in which Google entered a series of exclusives that, when layered on top of one another, create exactly the concern presented by the dairy hypothetical above: a large supplier that has foreclosed the vast majority of outlets by which a competitor's products could reach consumers. Google continued to enter additional exclusives (with browsers, for example) even as its share of the search market grew over time up to the roughly 90% share it now has held for roughly a decade.

94 Press Release, Apple, Google CEO Dr. Eric Schmidt Joins Apple's Board of Directors (Aug. 29, 2006), <https://www.apple.com/newsroom/2006/08/29Google-CEO-Dr-Eric-Schmidt-Joins-Apples-Board-of-Directors/>; Press Release, Apple, Dr. Eric Schmidt Resigns from Apple's Board of Directors (Aug. 3, 2009), <https://www.apple.com/newsroom/2009/08/03Dr-Eric-Schmidt-Resigns-from-Apples-Board-of-Directors/>.

95 Lisa Marie Segarra, *Google to Pay Apple \$12 Billion to Remain Safari's Default Search Engine in 2019: Report*, FORTUNE (Sept. 29, 2018), <https://fortune.com/2018/09/29/google-apple-safari-search-engine/>.

96 *Desktop Search Engine Market Share United States of America May 2019–May 2020*, STATCOUNTER GLOBALSTATS, <https://gs.statcounter.com/search-engine-market-share/desktop/united-states-of-america>.

97 CMA Report, *supra* note 5, at ¶ 3.80–3.81, 3.83 ("Firstly, we have viewed internal documents submitted by Google which suggest that at least part of the rationale for entering into default agreements is to make Google's search advertising revenues more secure. For example, an internal document referred to search advertising revenues as being 'exposed' where these came from mobile devices for which Google did not have a default agreement in place. . . Secondly, the high level of default payments, known as 'traffic acquisition costs', made by Google in particular demonstrates that it values these default positions highly. In 2018, for mobile devices alone, Google paid around \$1.3 billion USD for default positions in respect of UK consumers. This was around 16% of Google's total annual UK search revenues. The vast majority of these payments were to Apple. The default payments that Microsoft made to Windows PC manufacturers in the same year in respect of UK consumers were significantly lower and equated to a lower proportion of Bing's annual UK search revenues. . . As shown in Figure 3.4, Google holds default positions across a relatively larger part of the UK mobile browser sector (99%) than the UK desktop browser sector (84%). In turn, Google has a relatively higher share of supply in mobile search (97%) than it does in desktop search (86%). A similar correlation can be observed for Bing. Bing holds default positions across 16% of the UK desktop browser sector and almost none of the UK mobile browser sector. Bing's share of supply is much higher in desktop search (11%) than in mobile search (less than 2%).").

98 For a formal model of the impact of exclusives on competition, see Ilya R. Segal & Michael D. Whinston, *Naked Exclusion: a comment*, 90(1) AM. ECON. REV. 296 (2000).

We perceive no offsetting procompetitive justification for a supplier like Google, with a 90% share, that could outweigh the harm from entering or maintaining exclusive arrangements with browsers, handset makers, and the like. But for the exclusives, these channels would be available for existing or new competitors to compete for traffic and scale. This conclusion underscores the concern that Google has maintained and enforced its exclusive arrangements to create a barrier to entry to competitors that might challenge its monopoly power in search.

We perceive no offsetting procompetitive justification for a supplier like Google, with a 90% share, that could outweigh the harm from entering or maintaining exclusive arrangements with browsers, handset makers, and the like.

2. Android contracts (MADA and AFA)

As mobile devices and mobile search became more commercially important, Google developed a strategy to leverage its existing market power into this domain.⁹⁹ Google created a proprietary mobile OS using Android open source software. Google launched its Android mobile OS in 2008, though it was not available widely on US mobile phones until 2009 before it overtook Windows CE and Symbian worldwide in 2010.¹⁰⁰ Google did not charge device makers money up front to use Android. Rather, Google's revenue model was to sell ads through its own search engine and browser which came as part of Android. More Android handsets translated into more ad revenue for Google; Google therefore wanted more mobile OS share in order to create and maintain search share. Google required licensees to agree to Mobile Application Distribution Agreements ("MADAs").

The EC case describes the critical elements of the MADA.¹⁰¹ We focus on the anticompetitive consequence of mandating pre-installation of Google's search engine and browser as the exclusive home screen defaults.¹⁰² These had the effect of preventing or cutting off any wireless carrier's deal with a search rival to obtain traffic and scale. For example, Verizon partnered with Microsoft prior to the Google MADA contracts.¹⁰³ A Verizon-Android phone with a Microsoft default search engine was short-lived, however. Like other phone manufacturers, Verizon was forced to pre-install *and* set as default Google Search if

99 Case AT.40099–*Google Android*, *supra* note 30, at ¶ 113 (“When in the mid-/late 2000s the Internet industry began to shift its focus from PCs to smart mobile devices, Google recognised the opportunities and risks that this shift could bring about for its search-advertising business model.”).

100 Jacqui Cheng, *Android tops everyone in 2010 market share; 2011 may be different*, ARS TECHNICA (Jan. 31, 2011), <https://arstechnica.com/gadgets/2011/01/android-beats-nokia-apple-rim-in-2010-but-firm-warns-about-2011/>.

101 Case AT.40099–*Google Android*, *supra* note 30, at ¶ 174–188 (describing the rights and restrictions for OEMs under Google's MADA agreements).

102 *Id.* at ¶ 830 (“Second, the MADA prevents OEMs from pre-installing exclusively a competing general search app on their Google Android devices. Exclusive pre-installation increases the value for competing general search app providers, not at least because it allows OEMs to offer competing general search service providers more than being pre-installed side-by-side with Google, the market leader with shares in excess of 90% and strong brand recognition (see recital (712)).”).

103 Case AT.40099–*Google Android*, *supra* note 30, at ¶ 789(8) (“At the end of 2008, Microsoft signed a pre-installation agreement with Verizon, pursuant to which, in the US in 2010 and 2011, its general search service was pre-installed alongside Google on six models of Google Android devices. The traffic resulting from this agreement accounted for [15-25]% of the entire volume of mobile general search queries to Bing in the US during this period.”).

it wanted its phones to have the Play Store pre-installed.¹⁰⁴ Interestingly, as late as 2012 Google appeared to be trying to conceal the tie between Android and its search engine in public statements while it was at the same time enforcing it.¹⁰⁵ Of course, the MADA contracts also prevented Bing, or any search entrant, from partnering with an OEM to obtain search volume.

In its Android case, the European Commission concluded that the exclusives and default terms in Google's MADA agreement created a "status quo bias. . . through pre-installation of its general search app" and blocked entry and growth of competitors.¹⁰⁶ During this time period Google's share of the licensable smart mobile operating system market was 96%, so restricting access to that much of the market made it effectively impossible for a new entrant to enter and grow.¹⁰⁷ The contracts therefore may have permitted Google to maintain its monopoly position in search.¹⁰⁸ Dominance in mobile OS's however, may also have permitted Google to create a monopoly position in some settings. For example, the successful Russian search engine Yandex, lost share when Google required and paid OEMs not to install Yandex, which began only after Android comprised 80% of the handsets sold in Russia.¹⁰⁹

Google obtained leverage to exclude in this way because of the high market share of Google Android in the licensable mobile operating system market. The alternatives for handset makers that did not wish to license Android from Google after about 2011 were minimal to zero.¹¹⁰ Apple and Blackberry do not license their OSes to third parties. Other licensable mobile operating systems are Amazon's Fire OS, Windows, and Linux. However, these mobile OSes account for less than 5% of the total licensable OS market which caused the European Commission to remark that Google has enjoyed "strong and stable market shares" with "no effective entry" in the market since 2011.¹¹¹ Thus, the European Commission found that Google was a monopolist in the "licensable mobile operating system market" because there are no other viable options for handset makers.

A handset that was not "authorized" under a MADA could not install the Google Play Store, other key apps like Google Calendar or Google Chrome, nor could it use Google's trademarks.¹¹² A handset without the Play Store is not very useful to users because they cannot download the apps that make the handset so valuable in the first place.¹¹³ It is possible to load a bare android handset with Google apps but it takes considerable technical expertise and is a hassle.¹¹⁴ For this reason, it is not commercially feasible for a handset maker to use bare android rather than authorized Android.¹¹⁵

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- 104 Margrethe Vestager, Eur. Comm'r for Competition, Statement by Commissioner Vestager on sending a Statement of Objections to Google on Android operating system and applications (Apr, 20, 2016), https://ec.europa.eu/commission/presscorner/detail/en/STATEMENT_16_1506.
- 105 Danny Sullivan, *Google Doesn't Require Google Search On Android, Despite What FairSearch & Microsoft Want You To Believe*, SEARCH ENGINE LAND (Sept. 13, 2012), <https://searchengineland.com/google-doesnt-require-google-search-on-android-133158>.
- 106 Case AT.40099–*Google Android*, *supra* note 30, at ¶ 812.
- 107 The inability to compete for scale and network effects in this setting is analogous to the problem Netscape faced in the Microsoft case. *See Microsoft*, *supra* note 6, at 49.
- 108 For a formal economic model of how an incumbent can use tying to protect its monopoly from entry by a competitor in the tied product, see Dennis Carlton & Michael Waldman, *The Strategic Use of Tying to Preserve and Create Market Power in Evolving Industries*, 33(3) RAND J. ECON. 194 (2002).
- 109 Stoller, *supra* note 76.
- 110 Again, this is analogous to the situation that OEMs faced in Microsoft when they needed an operating system and Microsoft had a greater than 95% share. *See Microsoft*, *supra* note 6, at 51.
- 111 Case AT.40099–*Google Android*, *supra* note 30, at ¶ 445, Table 3.
- 112 *See id.* at ¶¶ 173, 175 ("First, hardware manufacturers have the right to pre-install and distribute a number of Google apps on their Google Android devices. . . Third, hardware manufacturers have the right to use Google's trademarks, subject to the Google Mobile Branding Guidelines.").
- 113 *Id.* at ¶ 630 ("Commercialisation costs also result from the need to convince users to try a new Android app store in a market where the Play Store has an established position. According to Opera, since 'Google Play [...] has established itself over the past few years as the default storefront for Android apps [...] [s]ignificant customer education and marketing investment would therefore be required to change this user perception with respect to an alternative appstore.').
- 114 Myriam Joire, *I tried to use an Honor Phone without Google's apps – it did not go well*, ANDROID POLICE (Nov. 7, 2019), <https://www.androidpolice.com/2019/11/07/i-tried-to-use-a-huawei-phone-without-googles-apps-and-it-did-not-go-well/>. *See also* Bassali et al., *supra* note 14, at 16.
- 115 Case AT.40099–*Google Android*, *supra* note 30, at ¶ 805 ("Downloads of general search apps cannot be compared in reach and effectiveness to the pre-installation of the Google Search app on GMS devices. This is because, as explained in more detail in Section 11.3.4.1.II, users that find general search apps pre-installed on their GMS devices are, on average, less likely to download alternative general search apps, in particular when the pre-installed app already delivers the required functionality.').

These factors meant that OEMs effectively had to install Google's browser and search engine in order to obtain an operating system.¹¹⁶ In theory, a user could replace these apps with competing options. However, users are unlikely to seek out alternatives to pre-installed apps.¹¹⁷ This is because users are very responsive to defaults.¹¹⁸ Decades of research in behavioral economics has demonstrated that even when consumers have choices and low switching costs, the default obtains far more market share than it otherwise would.¹¹⁹ A recent paper by Acquisti et al. reviewing the academic literature on this subject cites multiple studies showing that the framing of a choice has a huge impact on the proportion of users who choose it.¹²⁰ Therefore, the requirement that OEMs install Google defaults on such a large share of the market effectively denied rivals a chance to compete for scale and denied consumers a chance to choose more freely.

In addition to requiring use of the browser and search engine, a handset with Google's Android installed on it reports to Google the location of the user, the air pressure (height above ground), her speed of travel, likely conveyance, and other information multiple times per minute when the phone is on and connected.¹²¹ As discussed above, ads become more valuable if the supplier of the space has location data, and this additional margin caused by location information provided Google further financial incentive to create and maintain market power in search.¹²²

The foregoing discussion has explained how Google's requirements for preferential positioning, pre-installation, and default usage likely maintained Google's market power and monopoly in search. Google also purchased these protections from other sources of traffic that might otherwise have provided the scale a rival or entrant needed. These defaults, on almost the entire market, do not allow for competition on the merits in the market. Rather, they tend to demonstrate that Google must block users' access to competing products in order to obtain such a high share of search. Experiments such as choice screens demonstrate that Google's share is lower without a default. For example, in 2017 Russian antitrust authorities reached a settlement with Google requiring it to present Android users a neutral choice screen by which they could choose a search engine.¹²³ The implementation of the choice screen immediately halted Google's rise in market share and reversed it; Yandex (a Russian-language search engine) gained ground.¹²⁴

116 *Id.* at ¶ 180 ("Fourth, once a hardware manufacturer decides to pre-install one or more Google proprietary apps on its devices, it must pre-install all mandatory Google apps.")

117 *Id.* at ¶ 805 ("Downloads of general search apps cannot be compared in reach and effectiveness to the pre-installation of the Google Search app on GMS devices. This is because, as explained in more detail in Section 11.3.4.1.II, users that find general search apps pre-installed on their GMS devices are, on average, less likely to download alternative general search apps, in particular when the pre-installed app already delivers the required functionality.")

118 The classic example of this phenomenon is organ donation. States that automatically sign citizens up as organ donors ("opt-out" states) have much higher organ donation rates than those that require citizens to affirmatively sign up as a donor ("opt-in" states). See, e.g., Shai Davidal, Thomas Gilovich, & Lee D. Ross, *The meaning of default options for potential organ donors*, 109 PNAS 15201 (2012), <https://www.pnas.org/content/109/38/15201>.

119 See, e.g., Gabriel Carroll et al., *Optimal Defaults and Active Decisions*, 124(4) Q. J. ECON. 1639 (2009).

120 "Alessandro Acquisti" et al., *Nudges for Privacy and Security: Understanding and Assisting Users' Choices Online*, 50 ACM COMP. SURVEYS 44 (2017), <https://dl.acm.org/doi/10.1145/3054926> (detailing a study showing minor changes to Barack Obama's campaign website resulted in a 40% increase in sign-ups, another showing an increase in seat reservations from 9% to 47% based on how a train company set the website defaults).

121 David Yanofsky, *If you're using an Android phone, Google may be tracking every move you make*, QUARTZ (Jan. 24, 2018), <https://qz.com/1183559/if-youre-using-an-android-phone-google-may-be-tracking-every-move-you-make/>; Keynote Presentation of Peter Lord, VP, Strategic Initiatives, Oracle, March 29, 2018, <https://www.youtube.com/watch?v=VkgMGXKLeK0&feature=youtu.be>.

122 Case AT.40099—*Google Android*, *supra* note 30, at ¶ 114 ("In terms of opportunities, Google recognised the potential for a significant increase in the use of Google's services on smart mobile devices and the collection of valuable user data, in particular related to location. Smart mobile devices are a particular source of valuable user data, in particular in combination with other user data. As Google's CEO, Eric Schmidt, explained: 'We are at the point where, between the geolocation capability of the phone and the power of the phone's browser platform, it is possible to deliver personalized information about where you are, what you could do there right now, and so forth—and to deliver such a service at scale.'")

123 See Stoller, *supra* note 76 ("Immediately upon implementing the choice screen, Yandex recaptured a chunk of market share from Google. And its market share then stabilized.")

124 *Id.*

In addition to the defaults required by MADA, Google further bought *exclusive* default positions by sharing some of the revenue from search with handset makers and wireless carriers. These payments to make Google the exclusive default search engine may have prevented the entry of rival search engines at worse “positions” by paying intermediaries to ensure such entrants could not find customers.¹²⁵

In short, an entering search engine in the last decade had two routes to adoption, both of which appear to be blocked by Google’s contracts. It could not get on to the Android handset in any significant way because of the MADA exclusive contract and it could not get on to iOS because of the Apple exclusive contract. But a handset maker would naturally want the ability to run the auction described at the start of this paper and monetize the attention of its consumers. Critically, that requires more than one viable search engine bidder (as a company cannot bid against itself) or the handset maker earns nothing, and the monopoly search engine takes all the profit. OEMs that contracted with Google to use the “free” Android mobile operating system were locked into a situation in which they could not sell the search traffic on their handsets for what it was worth by engaging multiple strong bidders.

A search engine could take an alternative—though expensive—path to defeating Google’s exclusives by developing a rival mobile operating system *as well as* a search engine, and entering with both.¹²⁶ Or, equivalently, an OEM looking to break free of Google would need to create its own mobile operating system so that it would be free to hold an auction *and* then install the winning search engine on its own handsets. But the mere fact that a rival search engine theoretically *could* take a different path to access users and traffic does not mean that Google’s licensing restrictions are not anticompetitive and exclusionary, especially if that alternative path is an expensive one.

Indeed, the Court of Appeals for the District of Columbia examined and rejected a similar argument in the famous *Microsoft* case. Among the practices examined in that case were licensing restrictions by which Microsoft licensed its operating system on the condition that OEMs install (and prevent removal of) the Microsoft browser on start screens. Microsoft defended the practice by arguing that even if the restriction made it more expensive for rivals to deploy their browsers and to access users, Microsoft had not made distribution impossible. The Court of Appeals rejected the argument out of hand:

[Microsoft] argues that, despite the restrictions in the OEM license, Netscape is not completely blocked from distributing its product. That claim is insufficient to shield Microsoft from liability for those restrictions because, although Microsoft did not bar its rivals from all means of distribution, it did bar them from the cost-efficient ones.¹²⁷

These payments to make Google the exclusive default search engine may have prevented the entry of rival search engines at worse “positions” by paying intermediaries to ensure such entrants could not find customers.



125 Case AT.40099—*Google Android*, *supra* note 30, at ¶ 1192 (“The Commission concludes that between 1 January 2011 and 31 March 2014, Google abused its dominant position in the national markets for general search services by granting revenue share payments to OEMs and MNOs on condition that they pre-install no competing general search service on any device within an agreed portfolio.”).

126 For a description of this point, see O.E. Williamson, *Assessing Vertical Market Restrictions: Antitrust Ramifications of the Transaction Cost Approach*, 127 U. PA. L. REV. 953 (1979).

127 *Microsoft*, *supra* note 6, at 64.

The same is true here. The existence of hypothetical, expensive paths for rival search engines to gain traffic and scale does not mean that it isn't anticompetitive for Google to force them down those paths.

Moreover, even though developing a successful operating system is a substantial barrier to entry in and of itself, Google designed its contracts to block this path also. The AFA (Anti-Fragmentation Agreement) prevented an OEM that sold authorized Android handsets from, at the same time, selling any handsets based on a different version of open source android.¹²⁸

To see how this prevented entry, consider the following example. Suppose Samsung wished to take open source android and improve it into a proprietary operating system with its own app store, apps, and integration with Samsung hardware. If Samsung tried to sell even one unit of this new handset it would not be allowed under its contract to sell any Samsung authorized Android handsets.¹²⁹ According to the rules of the Google contract, Samsung could not sell the two products simultaneously, but would have to give up the incumbent product with known demand, Google Android, to jump entirely to a new product with uncertain demand. For example, demand for a mobile operating system depends on how many useful apps are available on the platform—which means that network effects are strong and form a barrier to entry—and so launching a new mobile platform is risky.¹³⁰

This AFA contract term appears to foreclose the potential entrants with most relevant capabilities from developing a rival OS because, if they experimented, they would lose their license to sell existing Android devices which comprised 96% of available market (licensable smart mobile OSes).¹³¹ This very significant financial penalty likely blocked entry by the group that would have benefited financially from using a different operating system, namely OEMs with expertise in designing and selling handsets.¹³² Interestingly, AFA contracts lasted for 10 years and a corporation was not permitted to sell authorized Android devices unless at least 3 years remained on its AFA.¹³³ In this way Google's AFA seems to have prevented a corporation from selling authorized Android handsets while it was preparing a rival mobile OS that it could launch on the day the AFA expired, thus raising the penalty even higher. The European Commission concludes the AFA contracts "maintain and strengthen Google's dominant position in each national market for general search services, deter innovation, and tend to harm, directly or indirectly, consumers."¹³⁴

It appears from the available evidence that the exclusive contracts that Google required allowed it to create a monopoly in mobile search by gaining share at the expense of existing competitors, especially Bing, and maintain that monopoly by excluding new competitors. Today Google holds over 90% of the market in general search and a 96% share in mobile search.¹³⁵ But these shares do not appear to be the result of competition on the merits. That is, Google did not throw open the doors and say to customers, 'please compare search engines and choose whatever you like better.' Rather, Google used its market power or its financial resources to make sure that consumers did not have that choice.

128 Case AT.40099—*Google Android*, *supra* note 30, at ¶ 157(2) ("[COMPANY] will not take any actions that may cause or result in the fragmentation of Android.")

129 Amazon could launch the Fire because they did not sell any Android handsets at that time. See Ben Fox Rubin & Roger Cheng, *Fire Phone one year later: Why Amazon's smartphone flamed out*, CNET (July 24, 2015), <https://www.cnet.com/news/fire-phone-one-year-later-why-amazons-smartphone-flamed-out/>.

130 Case AT.40099—*Google Android*, *supra* note 30, at ¶ 290 ("In the second place, app developers would be unlikely to switch from developing apps for Google Android devices to developing apps for smart mobile devices with a different licensable smart mobile OS because, in doing so, they would forego access to a large number of users of smart mobile devices. Android devices represented 48% of the smart mobile devices sold worldwide in 2011, 65% in 2012, 75% in 2013, 78% in 2014, 78% in 2015 and 81% in 2016. This was further confirmed by the majority of respondents to Question 17 of the request for information of 21 October 2015 on app stores. Respondents indicated the number of users/coverage of users to be the most important factor that app developers consider when choosing for which mobile OS to develop apps, since this allows them the best monetisation opportunities.")

131 *Id.* at ¶ 446.

132 Margi Murphy, *Google helped kill off Amazon's smartphone, emails allege*, THE TELEGRAPH (Sept. 30, 2019), <https://www.telegraph.co.uk/technology/2019/09/30/google-bribed-android-manufacturers-cut-revenue-featured-search/>. See also Case AT.40099—*Google Android*, *supra* note 30, at ¶ 1106 ("The Commission concludes that the AFAs prevent OEMs from developing their own forked version of Android. OEMs would be well-placed to develop an Android fork as some of them are, or have been, active in the development of smart mobile OSs (e.g. Samsung with Tizen). OEMs could therefore use their technical knowledge to develop their own forked versions of Android and either license the forks to third parties or incorporate them in their own smart mobile devices.")

133 Bassali et al., *supra* note 14, at 12.

134 Case AT.40099—*Google Android*, *supra* note 30, at ¶ 1139.

135 *Mobile Search Engine Market Share Worldwide May 2019–May 2020*, STATCOUNTER GLOBALSTATS <https://gs.statcounter.com/search-engine-market-share/mobile/worldwide>.

3. Acquisitions that denied scale to competitors

Google has acquired companies that provide important inputs to Google's competitors and potential competitors in search. We do not have access to internal documents that might shed light on Google's motives for particular acquisitions, but some of them appear likely to have been motivated at least in part from a desire to stunt the growth of competitors by denying these inputs that would help competitors gain scale.

For example, in 2011 Google acquired ITA, a software company that powered flight search and pricing inquiries. Prior to the acquisition, ITA powered Bing's flight search results and Bing was doing well in the travel segment; its results were high quality and the segment could be monetized due to the small numbers of high value large advertisers (e.g., airlines and hotels). The merger raised the issue that Microsoft may have become unwilling to invest alongside ITA in improving their joint travel product if Microsoft's horizontal rival (Google) owned and controlled its technology partner. Such a basic conflict of interest could later lead to expropriation of Microsoft's investments, making those investments risky.¹³⁶ The DOJ developed a vertical foreclosure theory, which in hindsight may have been too narrow, and cleared the merger subject to conditions.¹³⁷ In particular, Google agreed to a firewall keeping data separate between its own travel product and the new ITA internal division and to license ITA's services to rival airfare and booking websites.¹³⁸ Additionally, Google was required to license the ITA software to competitors (e.g., Microsoft) under reasonable terms for a number of years. The merger, however, caused Bing to exit a valuable niche that was generating an important source of revenue, search volume, and stability.¹³⁹

Waze is another acquisition by Google that appears likely to have blunted the ability of competing search engines to reach scale. As described above, knowledge of a user's location is very important to delivering a relevant and useful—and therefore costly—ad. Google had for a long time what was widely viewed as the best mapping software at the time of the Waze acquisition. Indeed, Apple had a difficult time matching the quality of Google Maps.¹⁴⁰ Because Google already had the best-in-class mapping software, which presumably provided it with best-in-class real-time location data, it is not obvious that Google would have purchased Waze simply to improve its own access to location data.

Waze, however, might have been extremely valuable to a competing search engine, either actual or potential, that did not already have mapping software or other similarly rich sources of real-time location data. Indeed, other potential or actual competitors in digital advertising were likely disadvantaged by their lack of location data relative to Google.¹⁴¹ Then Waze arrived on the scene with its innovative up-to-date traffic information for driving directions. Google acquired Waze at a nascent stage, despite having excellent maps itself, and despite Waze's attractive features being imitable.¹⁴² The effect of this purchase, and perhaps its intent, was to remove from the market a company that could have provided location information to a rival, location information that, as we have explained, is a critical input in driving the scale/quality/price feedback loop that could have helped that rival grow.

136 For example, Google later shut down access to information to some of its travel competitors. See Andrew J. Hawkins, *Google will stop feeding free airfare data to travel websites*, THE VERGE (Nov. 1, 2017), <https://www.theverge.com/2017/11/1/16591850/google-ita-matrix-shut-down-qpx-express-api>.

137 The agency's theory of harm was vertical foreclosure—that Google would preference its own flight business and disadvantage other participants in online travel. Press Release, Department of Justice, Justice Department Requires Google Inc. to Develop and License Travel Software in Order to Proceed with Its Acquisition of ITA Software Inc. (Apr. 8, 2011), <https://www.justice.gov/opa/pr/justice-department-requires-google-inc-develop-and-license-travel-software-order-proceed-its>.

138 *Id.*

139 Sean O'Neil, *Microsoft all but closes Bing Travel, expands MSN Travel*, PHOCUS WIRE (Jan. 20, 2015), <https://www.phocuswire.com/Microsoft-all-but-closes-Bing-Travel-expands-MSN-Travel>.

140 Andrew Hawkins, *Apple Maps is looking better than ever, but it still has a long way to go*, THE VERGE (Sept. 30, 2019), <https://www.theverge.com/2019/9/30/20888734/apple-maps-update-northeast-transit-google-maps>.

141 CMA Report, *supra* note 5, at ¶ 3.72 ("We consider that limited access to consumer location data may limit the ability of search engines other than Google to return relevant results to local queries.")

142 Mark Bergen & Ben Brody, *Google's Waze Deal Is a Likely Target in FTC Antitrust Sweep*, BLOOMBERG (Feb. 14, 2020), <https://www.bloomberg.com/news/articles/2020-02-14/google-s-waze-deal-is-a-likely-target-in-new-ftc-antitrust-sweep>.

4. Foreclosure of nascent competitors that rely on Google Search for traffic

The CMA describes how Google can use its market power in general search to keep specialized search competitors from competing effectively. Specialized search engines have arisen in a number of areas such as finance (Yahoo Finance, Lending Tree), local (Yelp, Angie's List), travel (Expedia, Booking.com), and shopping (Amazon, Etsy). The reasons consumers may like specialized search include their focus on one type of query, investments in quality to a degree that Google's automated tools do not provide, depth in one specific area, and decision tools designed for consumers who are looking to transact. These businesses often use other types of information (e.g., reviews in the case of Yelp) or assets (a distribution network in the case of Amazon) to raise quality for users.¹⁴³

It is critical that specialized search arises in service areas where advertising is lucrative. In considering all areas of specialized search together, they collectively cover a larger fraction of Google's revenue than their fraction of search queries. This is because search queries for "define gravity" or "history of the USSR" do not offer obvious advertising opportunities based on the search term (and will likely draw advertisers based on Google's data about the user). If users did not search for travel, finance, local, or shopping on Google at all, a larger share of the remaining queries would tend to be for less profitable searches like the opening hours of a museum. We see from the FTC memo that Google understands how important specialized search is from a financial perspective:

Vertical search is of tremendous strategic importance to Google. Otherwise risk [sic] is that Google is the go-to place for finding information only in the cases where there is sufficiently low monetization potential that no niche vertical search competitor has filled the space with a better alternative.¹⁴⁴

Often, specialized search can deliver results that compare favorably with the Google general search engine in their specialized niches.¹⁴⁵ Indeed, Google frequently states that it competes directly with sites like Amazon and Yelp.¹⁴⁶ And certainly there is similarity in the functionality of a Google shopping service and Amazon.com, and between a Google Local service and Yelp. However, the CMA does not conclude that any individual specialized search engine is a horizontal competitor of a general search engine, and this seems correct. However, collectively these sites represent a threat to Google.¹⁴⁷ Consider the performance of a constellation of the services listed above in its ability to both deliver relevance in many areas and achieve scale within those areas. Indeed, we know from the FTC memo, that Google appreciated this threat:

143 Chiradeep Basumallick, *Yelp vs. Google: Which is the best marketing option for SMBs?*, MARTECH ADVISOR (Jan, 29, 2020), <https://www.martechadvisor.com/articles/seo/yelp-vs-google-for-smbs/>.

144 FTC Staff Memo, *supra* note 4, at 20.

145 CMA Report, *supra* note 5, at ¶ 3.12 ("Search engines compete for consumers over the following dimensions of quality: **Relevance of results** – the ability of a search engine to return useful, relevant results in response to a range of queries is a key dimension of quality. Activities such as crawling and indexing, developing additional features, and refining algorithms each play a role in search relevance. **Ease of use** – consumers also want to be able to conduct their searches effectively and efficiently. Many search engines have built 'instant answer' boxes into the search results page, reducing the need for consumers to click through to other web pages. Features such as autocomplete and voice search also contribute to ease of use. **Attractiveness of interface** – search engines also compete to provide visually attractive interfaces, which can be another aspect of quality from the perspective of consumers. **Privacy and trust** – some consumers prefer to accept less personalized (and potentially less relevant) search results and adverts, in return for their search engine collecting and storing less data about their searches. **User rewards and incentives** – price is not a key parameter of competition in search; none of the general search engines that we heard from charge users or pay them for searches undertaken. However, some consumers value the non-monetary rewards for searches (such as promotional points or contributions to good causes) offered by certain search engines.").

146 Jillian D'Onfro, *Google's Chairman Says Amazon – not Bing – Is Its Biggest Search Competitor*, BUSINESS INSIDER (Oct. 13, 2014), <https://www.businessinsider.com/eric-schmidt-says-amazon-is-googles-biggest-search-competitor-2014-10>.

147 We also could imagine a single, specialized search engine posing a potential competitive threat in certain circumstances, especially if it successfully entered new verticals that kept user attention and permitted it to serve an increasing number of search ads. Imagine a travel site that began offering weather, maps, and local news for the locations a user types into a flight search. It might then also begin offering information and tickets for local concerts, access to how-to videos for snorkeling, or restaurant reviews and reservations, or the ability to purchase travel-related merchandise.

What is the real threat if we don't execute on verticals? (a) loss of traffic from google.com because folks search elsewhere for some queries; (b) related revenue loss for high spend verticals like travel; (c) missing opty [sic] if someone else creates the platform to build verticals; (d) if one of or big competitors builds a constellation of high quality verticals, we are hurt badly.¹⁴⁸

We call this the "Main Street threat." Any small shop on Main Street could not compete on its own with the department store (of old) or Walmart/Amazon (today) because of their small selection. But when they all co-locate on Main Street they become a very attractive destination for shoppers and provide a broad range of products and services.¹⁴⁹ Likewise, the totality of the of various specialized search engines present a threat because they will nip *specifically* at Google's lucrative verticals if they are free to invest and grow. As with Netscape, as a group they are not an effective horizontal competitor today, but are forecast, by the incumbent itself, to develop into one if left unchecked.¹⁵⁰ Going forward this constellation of nascent horizontal rivals could significantly squeeze Google's profit and exert pricing pressure to the benefit of advertisers, and quality pressure to the benefit of consumers, that could be just as significant as that posed by a rival that went head-to-head with Google in general search.

Another way to describe the threat specialized search poses is "disintermediation." If a site offers a sufficiently engaging experience, it would develop the ability to connect directly with Google's customers and develop valuable and monetize-able relationships with them on its own. Disintermediation is a threat common to dominant platforms, and motivates some of the anti-competitive conduct we have described on the part of Facebook, for example.¹⁵¹ If specialized search could use its quality to attract customers, customers might become accustomed to navigating to Main Street and asking questions at Booking.com for travel, Amazon.com for shopping and Yelp.com for local.

We call this the "Main Street threat." Any small shop on Main Street could not compete on its own with the department store (of old) or Walmart/Amazon (today) because of their small selection. But when they all co-locate on Main Street they become a very attractive destination for shoppers and provide a broad range of products and services.

5. The gateway

However, there are two very different ways to arrive at these specialized sites. One occurs when a consumer types Booking.com in her browser or opens the Booking app and bypasses Google entirely. Google earns no revenue in this situation and this is one reason why it demotes pages that promote this kind of app.¹⁵² However, typically

148 FTC Staff Memo, *supra* note 4, at 126, n. 102.

149 See, e.g., Robin Jones & Astgik Khachatryan, *Main Street O.C.: Seal Beach's Main Street Embodies Small-Town Charm*, ORANGE COAST MAGAZINE (Sept. 14, 2018), <https://www.orangecoast.com/features/main-street-o-c-seal-beachs-main-street-embodies-small-town-charm/> ("A post office, hardware store, law office, and insurance agency share the street with shops and restaurants.")

150 *Microsoft*, *supra* note 6, at 60.

151 Scott Morton & Dinielli, *supra* note 14, at 21.

152 Jeremy Stoppelman, *Google Goes After the App Interstitial: Protecting Consumers Or Its Own Search Monopoly*, SEARCH ENGINE LAND (Aug. 24, 2015), <https://searchengineland.com/google-goes-app-interstitial-protecting-consumers-search-monopoly-228543>.

only existing customers of the service have the app or know the business's URL. A common way a user arrives at the site is by opening the Google Search tool first and typing "Booking.com" or "airplane flights." Here, Google's general search engine is a pathway into its horizontal rival's service, raising the potential for foreclosure. The consumer is searching for a flight which can be bought on Booking.com or on a service that is less threatening to Google, perhaps because it is a Google property; this gives Google's general search engine both the incentive and the ability to foreclose.

The way in which Google generates profit from its advertising is a critical element to its methods of foreclosure and exclusion. Over the years Google has changed its SERP to first include ads on the side, then ads across the top as well as down the side, and then sponsored links that look like the top organic results but are not (as well as ads down the side and ads across the top).¹⁵³ Today, the bulk of the Google SERP page before the user scrolls down is advertising. On a mobile device, this is even more true, as often only the top ad is visible at first glance and scrolling down reveals several more ads before any organic links. Organic links are generated with Google's proprietary PageRank algorithm, which is designed to return the links that are most responsive to the consumer's need. However, if the organic links are not visible without scrolling, they will be ineffective compared to a large ad at the top of the page. A business must therefore make a choice to rely on the organic search results because of its inherent quality and match with the user's interest, or buy an ad in case the user cannot see the organic results. When the product being searched is "plumber near me," this tradeoff must be made by a specialized search engine such as Angie's List.

Google can foreclose in one of two forms. Google Search can rank Angie's List far down the page and it will get no customers. In addition to making its rival more difficult to find, Google can make the Google competitor visible and attractive at the top of the page. Steering a customer to the Google service in this way (even if it is lower quality) typically works because of behavioral biases towards default.¹⁵⁴ If the organic link is not on the first page of results, consumers are much less likely to click on it.¹⁵⁵ This tactic will cause more consumers to come to the Google service and fewer to the specialized search service, with the concomitant impact on advertising revenue.¹⁵⁶ Ranking or "steering" in this way becomes a method of foreclosure—either total or partial—of Google's specialized search rivals.

The second option Google has is to let its rival bid on an advertising spot at the top of the SERP. This spot comes at a high price because the value of the user with intent to shop is high and the opportunity cost for Google is high.¹⁵⁷ The specialized search competitor realizes that it will not obtain customers from Google *unless* it buys the ad, so it does, and therefore bears a cost that its Google competitor does not.¹⁵⁸ The CMA reports that specialized travel search businesses spend *half* their costs on Google ads.¹⁵⁹ Google raises rivals' costs this way—a type of partial foreclosure. Google can further exploit the ability to raise its rivals' costs by creating new properties at the top of the page where they can buy space to put Google-integrated content.

153 Ginny Marvin, *FAQ: All About The Changes to Google's Ad Layout On Desktop Search Results*, SEARCH ENGINE LAND (Feb. 22, 2016), <https://searchengineland.com/243057-243057>.

154 CMA Report, *supra* note 5, at ¶ 29 ("We have found that default behaviour by consumers has had a profound impact on the shape of competition in both search and social media. First, defaults play a very important role in influencing consumers' use of search engines, and second, default settings and the way in which choices are presented to consumers have a strong influence on the ability of platforms – particularly social media platforms – to collect data about their users, and the ability of users in turn to control the use of their data.").

155 *Id.*

156 *Id.* at ¶ 5.88 ("Finally, it appears that Google may be able to exploit its market power in general search by leveraging it into other related services. This includes specialised search. Google has launched downstream specialised search services, such as Google Shopping and Google Flights. Search advertising is a key source of traffic for downstream 'specialised search' markets, such as price comparison sites or online travel agents. Google has the potential to exploit this through self-preferencing in how specialised search is presented alongside general search results or through diverting search engine traffic away from rivals. We note that the European Commission found Google to have abused its dominant position in general search, through self-preferencing of Google Shopping. One online travel comparison site raised concerns in response to our statement of scope about how changes to Google's search algorithm have reduced its visibility in organic search results.").

157 We noted earlier that specialized search engines spend as much as 50% of total costs securing ad placement on Google Search ads. See *supra* note 23.

158 Additionally, Google can optimize its search auctions (AdWords) to extract maximal profit from specialized rivals. For example, if an auction would frequently have one bidder and therefore a low ad price Google could raise the reserve price or could broaden the search terms available for sale so that there are more bidders in the auction and the price rises as described in a paper by Levin and Milgrom. See Jonathan Levin & Paul Milgrom, *Online Advertising: Heterogeneity and Conflation in Market Design*, 100(2) AM. ECON. REV. 603 (2010).

159 *Id.*

6. Local search

The screenshot shows a Google search for "plumbers dc". At the top, there are sponsored results for "Michael & Son Service...", "Len The Plumber", and "F.H. Furr Plumbing, He...". Below these is a map of Washington, DC, with several plumbers marked. Under the map, there are organic search results from Angie's List and Yelp. The Angie's List results include "DC Plumber LLC" (4.5 stars, 17 reviews) and "Plumber In DC" (4.3 stars, 29 reviews). The Yelp results include "THE BEST 10 Local Favorite Plumbing in Washington, DC ...".

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An example of this is local search—a lucrative area in which Google has sought to grow recently. Google’s Local Services was launched in 2017 and has steadily expanded to more and more cities.¹⁶¹ When a user searches for a local service like a plumber, Google returns its Local Services results at the top of the page in a special box, today labelled “Google Guaranteed.” Service providers pay Google for top placement and inclusion on the list. Importantly, other platforms like Handy, TaskRabbit, Angie’s List, or Yelp are not allowed to advertise their platforms in this special box for Google Local Services.¹⁶² Only the plumbers or end services of interest may appear by entering their direct contact information. Needless to say, this system would not work for a platform trying review, curate, or provide decision tools to users to help them choose *among* plumbers, and it further requires the specialized search competitor to give its proprietary content directly to Google. Yet without buying ads in the Google Local Services box, these platforms are unlikely to be seen by users, since the unpaid organic search results for such searches only appear if the user scrolls down. Anecdotally, it appears these alternative platforms are very relevant to users, as evidenced by the fact that the organic search algorithm places them at the very top of the unpaid search results—though because Google places so many ads above organic search results, alternative platforms still appear far down the page where consumers are unlikely to click.¹⁶³

Google therefore has the choice to foreclose its specialized search rivals either through quantity (place the link far down the results list) or through raising rivals’ costs (require the rival to buy an expensive ad in order to be seen by customers). Both tend to exclude the rival from the marketplace. Google can also defeat nascent competition from new specialized search by launching specialized search businesses that compete with entrants or growing threats.¹⁶⁴

160 The image on the left shows a desktop search for “plumbers dc” but includes for illustration purposes a much longer screen than a normal user would actually see. The user would have to scroll multiple times to arrive at the entries for Yelp and Angie’s list at the bottom of this illustrative image. Those entries would not appear unless the user scrolled down.

161 Michael Guta, *Local Services by Google Offers Ads for Locksmiths, Plumbers, Other Businesses in 17 Cities*, SMALL BUSINESS TRENDS (Nov. 3, 2017), <https://smallbiztrends.com/2017/11/google-local-services-launch.html>. Today, these entries are labelled “Google Guaranteed” on the search engine results page.

162 Local Services by Google, Overview, <https://ads.google.com/local-services-ads/>.

163 A Google Search for “plumbers in DC” serves as an illustration. Google Search query for “plumbers in DC,” GOOGLE SEARCH, <https://google.com>. The first result at the top of the page is a sponsored list of plumbers that will lead you Google’s Local Services hub. Next, is a large map with the location of several plumbers mapped out. Only after that are entries from Angie’s List and Yelp. The average user would most likely never scroll past the ad for Google’s own service or see Google’s competitors.

164 CMA Report, *supra* note 5, at ¶ 5.88 (“Finally, it appears that Google may be able to exploit its market power in general search by leveraging it into other related services. This includes specialised search. Google has launched downstream specialised search services, such as Google Shopping and Google Flights. Search advertising is a key source of traffic for downstream ‘specialised search’ markets, such as price comparison sites or online travel agents. Google has the potential to exploit this through self-preferencing in how specialised search is presented alongside general search results or through diverting search engine traffic away from rivals. We note that the European Commission found Google to have abused its dominant position in general search, through self-preferencing of Google Shopping. One online travel comparison site raised concerns in response to our statement of scope about how changes to Google’s search algorithm have reduced its visibility in organic search results.”).

In addition, many specialized search businesses rely on scale to generate quality. For example, the more scale a travel site has, the more reviews it generates, and the more valuable the site is to other users.¹⁶⁵ Some businesses use machine learning on large datasets to analyze queries and improve services. By steering users to its own site, Google can weaken rivals because lack of scale and data lowers the quality of their products. By contrast, the additional customers and scale strengthen the Google product and raises its quality. This has a long run positive impact on Google's profits. The change in quality that follows foreclosure also protects Google from antitrust investigations. Google can assert to the authority that the foreclosed rival was not foreclosed, but rather had poor quality. The rival may have had obviously better quality at the time of foreclosure, but after months of losing customers, its quality will fall, while Google's will rise.¹⁶⁶ By the time the authority investigates the foreclosure incident, Google's quality may be superior. Therefore, steering that harms consumers can be difficult to detect.

Lastly, at some level all businesses are specialized rivals in a world where Google aims to keep users on its own properties to harvest information, link, and control ads. "Low" take rates occur whenever a user goes to a property that does not belong to Google and sees an ad there. The take rate in that situation is "low" from Google's perspective because Google does not get to keep 100% of the ad revenue. Rather, it must pay some fraction (though perhaps less than a competitive rate) to the provider of traffic. Google has an incentive to slowly expand its properties and steer users towards them to achieve a 100% take rate. We see this tactic playing out both in search and display ads. In the local example above, it appears to be more lucrative for Google if the customer finds their plumber exclusively through Google Local Services than if they merely use Google to navigate to a non-Google site like Angie's List, even when Google can extract some of Angie's surplus with an ad sale.

Harms

In this section of the paper we assess the consequences of a lessening of competition in search and mobile operating systems caused by Google's anticompetitive conduct. The harms that would flow from anticompetitive conduct that creates or maintains a monopoly in these markets are numerous. They include direct harm to competitors and potential competitors in search. Assuming the facts are as they appear, actual and potential entrants in mobile operating systems have also been excluded and harmed. A second group of harmed parties would be the suppliers of traffic such as publishers, portals, handset makers, and wireless carriers. To the extent that there is lessened competition in search, they would be unable to auction off the attention of their users for a competitive price and instead would be paid a price that is below competitive levels. Advertisers likewise would have fewer choices of suppliers of search advertising, leading them to pay higher prices to acquire consumers through search ads, and experience lower quality of those ads. And all of these harms would feed through to final consumers. When competition in search is lessened, consumers do not experience the quality and innovation in search that would naturally occur when multiple firms are vying for the attention of searching consumers. The loss of competition in mobile operating systems also causes consumers to lose from lack of innovation in that market.

Further, consumers benefit from the availability of content on the internet that supports itself through selling advertising. When those content providers are paid below-competitive prices for their traffic, they invest less in their business, leading to lower quality and consumer harm. In addition, consumers pay the higher prices caused by pass-through of the higher variable costs of advertisers. And consumers lose the benefit of the new businesses that advertisers cannot profitably launch due to the supra-competitive cost of acquiring customers. We explore these harms in more detail now.

165 *Id.* at ¶ 23 ("There are advantages to scale in user queries and click behaviour (known as 'click-and-query' data), since the more such data that search engines have, the more able they are to improve their algorithms. We understand that scale advantages are particularly high for uncommon or 'tail' queries.").

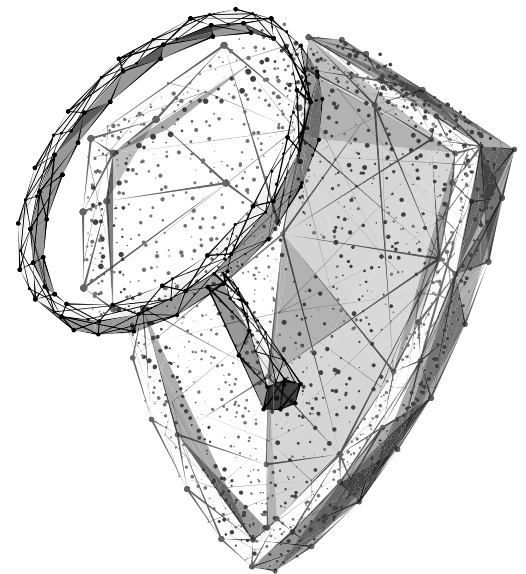
166 *Id.* at ¶ 24 ("In light of the importance of search relevance to consumers and keyword coverage to advertisers, a lack of comparable scale in click-and-query data is likely to be a key factor that limits the ability of other search engines to compete with Google.").

Clearly, assuming there has been an antitrust violation, Google's rivals in general search have been harmed by the various types of exclusive contracts described above. Google's purchase of defaults for large sources of traffic has caused rivals including Bing to be unable to obtain scale—which causes higher quality, or relevance—and therefore create a virtuous circle of competition, or “feedback loop,” as the CMA calls it. If actual and potential rivals had not been prevented from obtaining scale, either overall, or in some valuable niches such as travel and finance, they could have maintained high quality and more robust price and innovation competition with Google, to the benefit of advertisers, publishers, and consumers.

Innovation in such an important product as a search engine would likely be very valuable to consumers. Although economies of scale and the resulting quality may naturally drive consumers toward a bigger search engine, because queries are so varied in their frequency, the market might well provide more than one search engine that delivered excellent relevance for a wide range of queries, as well as particular search engines that specialized in rarer niches. Google's exclusive contracts appear to have prevented society from learning what market structure or alternative search engines might arise to serve the needs of the people by foreclosing its competitors. As just one example, the *New York Times* recently has reported that a former Google executive is developing a search engine that would be supported by subscriptions, not ads, to ensure that it did not profit by serving ads alongside material that, for example, sexualizes children.¹⁶⁷ It seems likely to us that Google's web of defaults and exclusives might make it difficult for this sort innovative rival to enter and compete on the merits.¹⁶⁸ Consumers are harmed by lack of choice and lack of the additional innovation such as this that would be driven by vigorous competition.

Specialized search engines that are a live threat in the areas in which they specialize have also been harmed. The evidence seems to show that Google foreclosed them either through placing their organic result low down on the SERP or requiring them to buy a high-priced advertising spot

Google's exclusive contracts appear to have prevented society from learning what market structure or alternative search engines might arise to serve the needs of the people by foreclosing its competitors.



167 See Daisuke Wakabayashi, *A Former Google Executive Takes Aim at His Old Company With a Start-Up*, N.Y. TIMES (June 19, 2020), <https://www.nytimes.com/2020/06/19/technology/google-neeve-executive.html>.

168 We focus solely on economic harms in this paper but do not mean to imply that there are not other important social harms to consider. One element of competition could be consumer preference for algorithms that avoid producing search results with harmful or dangerous content. Consider the example of Google searches that provide links to hate sites or disinformation. The Southern Poverty Law Center has reported that the first step in the radicalization of Dylann Roof, for example, the young, White man who killed nine parishioners at a Black church in Charleston, South Carolina, was a Google Search. According to his own manifesto, Dylann Roof typed “black on White crime” into the Google search engine, and the results included “pages upon pages” of false information about murders of White people by Black people. See *Weekend Read: Dylann Roof murdered nine people because of a lie about ‘black-on-white crime’* (June 15, 2018), <https://www.splcenter.org/news/2018/06/14/weekend-read-dylann-roof-murdered-nine-people-because-lie-about-black-white-crime>. SPLC also reported that, until recently, Google searches for “Martin Luther King” and “Jew” yielded racist and antisemitic websites as the top organic results. See Cory Collins, *The Miseducation of Dylann Roof*, TEACHING TOLERANCE (Fall 2017), <https://www.tolerance.org/magazine/fall-2017/the-miseducation-of-dylann-roof> (embedded video). Surely there are consumers who would choose to use a search engine that did not serve up these sorts of dangerous materials if the choice were available, easy to select, and otherwise produced relevant results.

high on the SERP. If Google had instead competed with these businesses on the merits, consumers would have benefited from more innovation and quality generated by that competition. Instead, Google reduced the scale of its rivals through denying them customers and delivering that scale to itself. Because rivals in specialized search could buy themselves back to the top of the page with high-priced ads, it cannot be the case that the Google's motivation was designed to protect consumers from low quality.¹⁶⁹ If the specialized search provider was not high on the organic SERP list because of Google's concern that consumers only see the best quality, such rivals would presumably not be able to win prominent ads either.¹⁷⁰ The steering of consumers away from specialized search rivals that are good matches to Google also lowers the quality of a specialized search service that consumers value.

Traffic generators sell the attention of their searching consumers to a search engine for a price. When there is more than one search engine vying for the business of a traffic generator, they earn competitive prices for their customers' attention. Those competitive prices cause traffic generators to invest appropriately in their businesses, in particular, investing in ways that attract consumers because the business is high quality and engaging. The sellers of traffic include portals, handset makers, wireless carriers, publishers, and competing browsers. The inability of these traffic sources to hold a competitive auction means that they earned less than their content and consumers were worth. Any anticompetitive lessening of competition by Google harmed those businesses directly. Their reduced incentive to invest in their business, whether content, network, hardware or software, becomes a direct harm to end consumers. While Google in some cases offered "free" apps and software to traffic generators, it, at the same time withheld from them the payments that would otherwise have accrued for the attention of searching consumers. As can be seen from Google's profit level, this trade was unfavorable for traffic generators.

Given Google's anticompetitive contracts, accessing the profits available from search may have required a rival to enter with *both* a search engine and a mobile operating system. This higher entry cost would deter potential entrants who might have otherwise entered search, harming their business. In addition, Google's AFA contract terms made entry especially costly to potential entrants who already provided handsets. These capable potential entrants into mobile operating systems had a large business opportunity foreclosed from them, which is again a direct harm. Given such foreclosure, investment and innovation in mobile operating systems—a product that has a strong impact on consumer welfare—was lower than it otherwise would have been. Consumers who would have benefited from more competition in mobile operating systems were harmed.

Advertisers who wish to buy an ad for a particular search term are harmed by the higher (monopoly) prices and lower quality that are the natural consequence of lessened competition. Those higher costs are a direct harm to the advertiser. Because search is often sold on a per click (or per action) basis, it is part of the marginal cost of a sale or the cost of acquiring the marginal customer. Therefore, a higher cost of search ads is passed through, at least in part, to the final prices of goods and services. This becomes another harm to the advertiser, who loses sales and profit due to the higher input costs. Of course, it is also a harm to the end consumer. The advertiser may not launch products that it otherwise would have due to the high cost of customer acquisition—depriving consumers of the benefits of those new products. The advertiser is further harmed when the search provider does not provide a competitive level of quality. Advertisers want to be able



169 Weijia Dai & Michael Luca, *Effectiveness of Paid Search Advertising: Experimental Evidence*, Harvard Business School Working Paper 17-025 (Oct. 1, 2016), https://www.hbs.edu/faculty/Publication%20Files/17-025_dce88d96-f2d7-4147-80b3-f1d345a76765.pdf.

170 See Michael Luca et al., *Does Google Content Degrade Google Search? Experimental Evidence*, Harvard Business School Working Paper 16-035 (Sept. 2015), <https://dash.harvard.edu/bitstream/handle/1/23492375/16-035.pdf?sequence=1&isAllowed=y> ("In areas where Google does not face a serious specialized search competitor, like general knowledge questions, or health questions, Google relies on the best third party sites as revealed by PageRank (sites like Wikipedia or the Mayo Clinic). It is only where it faces a specialized competitor that Google engages in degradation of the search as described here.").

to engage in frequency capping (which improves the quality of matches), or meld search data with other internal data (to generate a better quality ad campaign), or audit ads to determine where they appeared on the page and for how long (to generate a better quality ad campaign). All of these practices are restricted or forbidden by Google Search.¹⁷¹ In a world where advertisers could move their business to a rival search engine that offered better quality, search engines would be incentivized to offer higher quality on dimensions advertisers care about.

All of the harms recited above flow through to end consumers. These end consumers have a lower quality search experience due to less competition between general search engines and between specialized search and general search. Such competition would generate innovation in search that benefits consumers. Lack of entry and innovation in mobile operating systems is also a direct harm to consumers. The importance of a mobile operating system in the everyday lives of consumers and the enormous benefit from increases in its functionality indicate that there are likely large harms to consumers from Google's anticompetitive conduct in this area alone. The higher prices paid by advertisers are passed through to consumer prices; higher prices harm consumers. Consumers are also harmed by lower innovation in goods and services caused by the supra-competitive cost of acquiring customers. Lastly, consumers are harmed by underinvestment in related internet businesses. Businesses that are supported by the sales of ads generate benefits for consumers who can buy less expensive handsets and wireless plans or enjoy better quality browsers and content. These benefits cannot occur when Google pays those businesses below-competitive prices for their consumers' search queries.

In antitrust, the efficiencies that are relevant to an evaluation of Google's conduct are only those that are lost *under a less anticompetitive alternative*. If the benefit also arises under competition in search engines, then obviously that benefit cannot be claimed by Google as an offset for monopoly prices and quantities. For example, if search advertising becomes more efficient and less expensive as technology progresses, then prices for such advertising will fall over time under many market structures. The fact that advertising prices may fall when Google is a monopoly could be reflecting such an underlying trend; in that case, economic theory and decades of practical experience tell us that prices would fall *more* if there were competition in the market. Falling prices, standing alone, simply is not a defense to a monopolization claim.

Likewise, a handset maker may be paid a fraction of search revenue in exchange for placing Google Search in an exclusive default position, and this may allow the maker to lower the purchase price of the handset. But if there were multiple effective search engine bidders when the handset maker auctioned off that spot, it would earn a higher price for its consumers' attention. It could then set an even lower price for its handsets. Consumers would benefit from that lower price as well as more innovative search. Thus, simply the existence of a subsidy to handset makers is not a cognizable benefit.

Potential Remedies

The primary purpose of this paper is to provide a roadmap of a potential US antitrust case against Google in search and to draw out that narrative in a way that non-specialist readers can appreciate. However, supposing that the government were to be successful in bringing an antitrust case against the company, some remedy would need to be proposed. We briefly address that issue here. First, the purpose of a remedy in an antitrust case is to restore the lost competition. Consumers deserve a vibrant and competitive search market going forward, particularly because it has been monopolized in the past. Second, the remedy should protect all sides of the market from ongoing anticompetitive conduct by Google. Structural remedies are preferred for their administrability, but it is also possible for an effective remedy to consist of simple conduct or behavioral changes such as the elimination of particular contractual terms.

The divestiture of any acquisition that contributed to Google's market power (e.g., Waze) is one possible remedy. Such divestitures might be acquired by potential search entrants, or might operate as stand-alone firms that could contract with a range of possible entrants. A straightforward contractual change would be to eliminate the problematic terms in the MADA and AFA contracts that raise entry barriers. Another is to prohibit Google from contracting for a default or exclusive position with a traffic generator. A choice screen that does not require rivals

171 Scott Morton & Dinielli, *supra* note 13, at 32.

to pay for access is a remedy that already has been shown to be effective in returning competition to the Russian search market.¹⁷² Another might be to prohibit Google from pushing out software changes that “default to the default” by overriding users’ selections of competing search engines.

However, it is perhaps most important to protect specialized search providers, as those nascent competitors already exist and might be the most rapid source of competition. It is important that a specialized search provider appear at the top of a SERP when it is a good match, rather than being pushed down or forced to pay to be seen. A remedy could require that Google provide a vertical half (or some other fixed fraction) of the SERP for organic non-monetized links, with another half of the page for monetized results or other possible innovations such as boxes. The significant fraction of the page comprised of organic links creates plenty of room to display meritorious matches, whether of intermediaries or end providers. The part of the page that is monetized provides Google its revenue and allows the company to design and allocate the space as it thinks best. Two further restrictions would be necessary to protect specialized search from directed attacks or from Google filling both the organic and paid results with its own properties. One rule might be that the page rank algorithm must be applied equitably to specialized search (e.g., the detection of Angie’s List would not cause a different “special” page rank algorithm to be deployed). And secondly, if the algorithm awards the first organic spot to a Google property, Google properties may not bid for ads on that SERP. No doubt there are many other useful ideas for remedies, but we offer these as some simple options that, individually or collectively, would help to protect specialized search, as well as limit Google’s ability to erect barriers to growth of competitors. Lastly, a successful remedy creates open and undistorted competition going forward. Because of the strength of indirect network effects in search, this competition might be as much *for* the market as *in* the market. However, if the ability to enter and compete is not hindered, entrants and nascent entrants will put competitive pressure on the incumbent and it will be forced to either improve its offer to consumers or lose market share to a competitor that does. Either of those outcomes represents a gain to consumers.

172 See Stoller, *supra* note 76.

Conclusion

Google Search today is a monopoly in the US, and the facts we have described herein, assuming they are borne out through a full investigation, support the conclusion that Google maintained its monopoly position not through competition on the merits but rather through a series of contractual arrangements and conduct designed to create barriers to entry, primarily through denying scale, to existing and nascent rivals. There is no doubt that, in the early days of search engines, Google competed with other search engines such as Bing along parameters including search speed, simplicity of interface, and the like. But there is no rule in antitrust law or economics that says that, just because your product met with initial success, you then get to maintain your monopoly by excluding your competitors and shielding yourself from potential and nascent competition.

Google has, for over a decade, pursued a strategy that now, in hindsight based on the public record, has fully revealed itself to include anticompetitive behavior. Google took advantage of the unique interplay of scale, quality, and advertising prices not just to grow its own user base—or scale—but to deny similar opportunities to its rivals and potential rivals.

Google paid substantial sums to secure default and exclusive default positions that steered traffic to itself and made it difficult or impossible for its rivals to access that same traffic. Google frustrated consumer choice through software updates that reversed users' selection of competing search engines. It developed an operating system and then offered it to OEMs and wireless carriers only if they would do Google's bidding by refusing to include rival search engines on handsets. It bought up companies that, through partnerships, had the potential to bring scale to rivals. And it took advantage of the fact that it serves as the gateway to specialized search sites—which collectively pose a significant competitive threat—to foreclose those sites, deny them scale, and raise their costs.

This is a classic tale of a likely monopolization strategy premised on denying scale to rivals, reminiscent of the now decades-old case against Microsoft. In that case, Microsoft had power in its operating system and used that power to exclude Netscape's browser, a nascent threat to its monopoly. Once nearly everyone used the Microsoft browser, Microsoft could be sure it did not develop in a way that threatened the Windows operating system where Microsoft earned its monopoly profit.¹⁷³ In a similar manner, Google developed a separate product—the Android operating system—and after it achieved market power, Google appears to have used that power to exclude Bing and others that posed a threat to its search monopoly. The exclusive contracts in the Android agreements ensured that rival search engines did not develop in a way that threatened Google's market share or profits and made entry virtually impossible.

It developed an operating system and then offered it to OEMs and wireless carriers only if they would do Google's bidding by refusing to include rival search engines on handsets.

¹⁷³ *Microsoft, supra* note 6, at 60 ("Therefore, Microsoft's efforts to gain market share in one market (browsers) served to meet the threat to Microsoft's monopoly in another market (operating systems) by keeping rival browsers from gaining the critical mass of users necessary to attract developer attention away from Windows as the platform for software development.").

Google may have followed the Microsoft playbook twice. Google seems to have then used its market power in search to exclude its nascent specialized search competitors. The possibility of “Main Street” and its high-quality services arising as an alternative destination for consumers was a significant threat to Google. Having foreclosed and marginalized specialized search, Google could be sure the SERP develops in a way that does not threaten its monopoly power and profits in search, for example by placing end results rather than intermediaries at the top of the page.

We do not know what the competitive landscape would look like today if Google had not been engaging in anticompetitive conduct for so long. The extent of network effects and economies of scale vary across different niches and services in a way that only unimpeded competition is likely to reveal. Such competition might stimulate more innovation and more varieties of search innovation that benefit consumers. It might drive down advertising prices so that a new wave of entrepreneurs can launch businesses, and existing small business could recover from the pandemic. We don’t know what features or innovations a competitive search market would have produced had Google not engaged in exclusionary conduct for the last decade. Absent intervention, we also will not know what this market is capable of producing in the next.