Knight Georgetown Institute

Strategic Market Status Investigation into Google's General Search and Search Advertising Services

Comments of the Knight-Georgetown Institute to the United Kingdom Competition and Markets Authority

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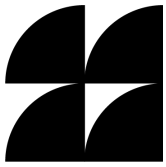

About the Knight-Georgetown Institute

The Knight-Georgetown Institute (KGI) is dedicated to connecting independent research with technology policy and design. KGI serves as a central hub for the growing network of scholarship that seeks to shape how technology is used to produce, disseminate, and access information. KGI is designed to provide practical resources that policymakers, journalists, and private and public sector leaders can use to tackle information and technology issues in real time. Georgetown University and the Knight Foundation came together to launch the institute in 2024. Learn more about KGI at https://kgi.georgetown.edu.

Introduction

Online search is a critical information gateway for billions of users around the world. Google's dominance in search has made it the subject of antitrust enforcement and competition regulation in multiple jurisdictions. The United Kingdom (UK) Competition and Markets Authority (CMA) has conducted pioneering analysis of the competitive dynamics of the search market in the UK, revealing problematic concentration. As the CMA investigates whether to designate Google as having Strategic Market Status (SMS) in general search and search advertising,[1] and what pro-competitive interventions to consider, the Knight-Georgetown Institute (KGI) welcomes the opportunity to provide perspective from across multiple jurisdictions about how to most effectively spur competition.

In August 2024, the United States (US) District Court for the District of Columbia found that Google illegally monopolized the markets for general search and search text advertising, in violation of Section 2 of the Sherman Act.[2] After finding liability, that case has moved into the remedy phase. A robust debate about how to craft remedies and the relative merits of different approaches has ensued. To inform this and other efforts to promote competition in online search, KGI gathered a group of leading experts from the US and Europe in October 2024 for the Future of Search Competition Workshop, a two-day convening designed to (1) identify lessons from the empirical and implementation evidence from various jurisdictions that have engaged in enforcement or regulation related to online search, and (2) work through a broader set of interventions suggested as remedies to understand their utility given the trajectory of the technology and business environment in search.

These comments synthesize a number of key considerations for crafting effective search remedies that resulted from workshop discussions and analysis of published work on this topic. The focus of these comments is on how to craft remedies that will be most effective in restoring competition. Rather than proposing a specific remedy formulation, it highlights important considerations for policymakers depending on which remedies are selected from the universe of those available. The complete workshop report and full list of participants can be found on the KGI website.[3]

The analysis that follows is in two parts: (1) lessons learned from other jurisdictions (responding to Question 6) and (2) effective remedy design (responding to Questions 4 and 5).

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[1] Competition and Markets Authority, “SMS Investigation into Google’s General Search and Search Advertising Services.”
[2] Mehta*, Memorandum Opinion*.
[3] Cooper, van den Boom, and Arnao, “Considerations for Effective Search Competition Remedies.”

Lessons Learned from Other Jurisdictions (Question 6)

Q6: What are the key lessons the CMA should draw from measures imposed in relation to general search services in other jurisdictions? Are there specific areas where imposing a similar measure in the UK is more or less important for their overall effectiveness?

A. Europe, Russia, and Turkey Antitrust Cases

Google Search and adjacent product lines have been the subject of antitrust investigation and enforcement in numerous jurisdictions.[4] This section focuses on three cases whose effects have been the subject of empirical investigation: Europe, Russia, and Turkey.

1. Europe

Google has been investigated by the European Commission in three antitrust cases: Google Shopping, Android, and AdSense.[5] This section focuses on the first two decisions, as they are most relevant to the CMA's investigation.

In each case, the Commission adopted an infringement decision paired with remedies. Generally, the Commission is not very exactingly prescriptive in how investigated firms are supposed to remedy anticompetitive behavior. The Commission typically explains what needs to be done by offering high-level principles, and the investigated firm designs its own compliance.

In the Google Shopping case, the Commission found that Google had engaged in anticompetitive self-preferencing of Google Shopping on the Google search engine results page (SERP). The Commission imposed nondiscrimination obligations on Google's display and operation of the SERP.

To remedy the behavior, Google functionally separated its Google Shopping division from its other divisions and set up an auction for access to the Google Shopping box.[6] Prior to the division, Google Shopping conducted two activities: operating the Shopping box on the SERP and the stand-alone Google Shopping website. With the separation, the new independent division became responsible for operating the infrastructure of the Shopping box, while the operation of the stand-alone website remained within Google. The latter division would act as a bidder for the auction in its own right. This

[4] Bergqvist, "Taking Stock of Google's Antitrust Troubles as the World Turns Against It."
[5] European Commission, *Case AT.39740 Google Search (Shopping)*; European Commission, *Case AT.40099 Google Android*; European Commission, *Case AT.40411 Google Search (AdSense)*.
[6] Ibid.; Höppner, "Antitrust Remedies In Digital Markets." See p. 3 for a detailed overview of the restructuring process and the remedies.

meant that, effectively, competitors in comparison shopping were bidding directly against Google in the auctions for the Shopping Box.[7]

In 2021, the new Google Shopping division was found to have been preventing competing comparison shopping services from participating within the Google Shopping box unless business models were adjusted to either directly sell products or intermediate between merchants and Google itself, limiting the ability of Google's competitors to themselves offer comparison shopping services on equal footing.[8]

Meanwhile, as the remedies were focused on access to the Shopping box, Google did not stop demoting competing comparison shopping services in unpaid search results.[9] Furthermore, Google allegedly helped advertisers with guidance to set up hollow websites so that they could bid for spaces in the Shopping box as well, effectively blurring the lines between comparison shopping and advertising.[10] As a result of how the remedies were implemented, traffic to competing comparison shopping service providers continued to decline.[11] Through its interpretation of the scope of the required remedies, and the way in which it implemented the changes, Google was able to both adhere to the text of the specifications of the Commission and ensure that the remedies were ineffective to restore competition.[12]

The Commission Decision in the Android case led to the introduction of choice screens for web browsers and search access points on Android devices; a prohibition of anti-fragmentation agreements; and limitations on the use of revenue sharing agreements, prohibiting Google from requiring original equipment manufacturers (OEMs) to exclusively install Google Search.[13] The adoption of choice screens had precedent from earlier antitrust enforcement in the EU. In 2009, Microsoft agreed in a settlement with the European Commission to display a choice screen for users of Internet Explorer to select a default browser.[14] Empirical evidence indicates that this choice screen likely had little effect on Internet Explorer's market share (1.4-2%).[15] In 2013, Microsoft was fined by the European Commission after it discovered the company had dropped the choice screen during an update to Windows 7.[16] Notably, it took 14 months for anyone to notice that the choice screen was no longer available.[17]

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[7] Ibid.
[8] Gervasoni et al., *Judgment of the General Court*.
[9] Höppner (2020) 'Antitrust Remedies In Digital Markets'.
[10] Ibid.
[11] Ibid.; Hink and van den Boom, "The idealo-founder speaks."
[12] In its September 10, 2024 ruling, the Court of Justice of the European Union concluded that the remedy adopted by Google did not succeed in addressing the abuse identified by the Commission. See Lenaerts et al., *Judgment of the Court*.
[13] European Commission, *Case AT.40099 Google Android*.
[14] Dignan, "EU ends Microsoft antitrust probe; Accepts browser choice."
[15] Vásquez Duque, "Active Choice vs. Inertia?"
[16] Chee, "EU fines Microsoft $731 million for broken promise, warns others."
[17] European Commission, "Antitrust: Commission fines Microsoft for non-compliance with browser choice commitments."

Nevertheless, the Commission accepted Google's proposed choice screen as a component of the Android case remedy package. The first renditions of the choice screen were considered wholly ineffective, as Google used the design of the choice screen to suppress viable alternatives. By designing the choice screen auction in a way that prioritized search engines that generated the most revenue per install, the choice screen attracted poor quality search providers. Moreover, Google only provided five choices, did not offer any explanation of the choices, and made search providers bid to be placed in the auction.[18] In 2021, Google changed its choice screens to be more effective. It introduced 12 choices, with a small amount of information, and access to the choice screen became free of charge.[19] Despite these changes, the choice screens have had negligible effects on Google's market share.

In these two cases, the Commission attempted to stop Google from leveraging market power to and from Google Search. The Android case relates to leveraging power from upstream markets (Android and Chrome) to strengthen Google's position in search. Meanwhile, the Google Shopping case attempted to address leveraging from Google's search monopoly into downstream comparison shopping markets.

In both instances, the remedies have proven insufficient to restore competition. In relation to Android, empirical investigation has estimated that the impact of the remedies following the Android case led to less than 1% shift in market share between Google Search and its competitors.[20] Meanwhile, Google has continued to leverage its power from search downstream to comparison shopping markets.

The ineffectiveness of remedies following these cases can be attributed to a number of factors. In Google Shopping, the European Commission allowed Google to design its own remedies.[21]

Allowing a violator to design its own remedies is a major challenge in EU antitrust enforcement. In this instance, the result was a flawed auction that excluded and disadvantaged actual and potential competitors in comparison shopping, while allowing advertisers to issue bids for placement in the Google Shopping box. In the Android case, the OEMs' total dependence on Android to be able to operate in the market rendered the contractual changes impotent. Here too, Google initially introduced suboptimal choice screens based on an auction that created perverse incentives for low-quality bidders to bid the most. Even after revising this design, choice screens were only offered on new devices and only shown once. The combination of contractual measures and a one-time choice was not enough to change market shares in a meaningful way. This difficulty is a major reason why the

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[18] The auction was designed on payments "per install", rather than "per appearance." It therefore attracted bids from parties that aimed to extract exorbitantly high rents per user. This resulted in the choice screen being filled with relatively unknown and untrustworthy suppliers. See Ostrovsky, "Choice Screen Auctions"; Lomas, "Google's EU Android choice screen isn't working say search rivals, calling for a joint process to devise a fair remedy"; FairSearch, "Submission on behalf of FairSearch to the ACCC's Issues Paper"; FairSearch, "European Commission must require effective Android remedies."

[19] Höppner and Westerhoff, "Google finally amends Choice Screen remedy to prevent non-compliance proceedings in EU Android case."

[20] Decarolis, Li and Paternollo, "Competition and Defaults in Online Search."

[21] European Commission, *Case AT.39740 Google Search (Shopping)*.

Commission later chose to pursue promotion of competition via legislation instead of continued antitrust enforcement.

2. Russia and Turkey

Cases in Russia and Turkey have resulted in stronger effects, but many of the underlying reasons for this are not translatable to the UK market.[22] In Russia, Google was required to end its exclusive deals with OEMs, allow competing search engines to be preinstalled, stop self-promoting Google Search exclusively, and show alternative search engines in a choice window (and later a choice widget). Only Yandex and Mail.ru appeared as choices alongside Google. The result was estimated to be a 10% increase in adoption of Yandex. This would indicate that the combination of contractual changes with a choice screen offering limited choices is more effective when there is already a strong search competitor. Cultural and political considerations may have also supported the uptake of Yandex as a "national champion" firm.

Turkey took a different approach, prohibiting Google's contracts with OEMs from (1) requiring or implying the exclusive preinstallation of Google Search or the exclusive placement of the Google Search widget on the home screen, (2) requiring Google Search to be assigned by default to all search access points, (3) requiring or implying the installation of Google Webview as the default in-app web browser, and (4) circumventing these three conditions through financial or other incentives. Google reportedly exploited OEMs' dependence on Android to exert pressure on the competition authority to make changes.[23] It took Google five months and a period of daily fines from the Turkish competition authority to bring its contracts into compliance with the remedy. Huawei, a significant player in the Turkish mobile handset market, switched its default to Yandex. The overall result of the remedies is estimated to be a shift of approximately 10% market share to Yandex.

This shift is attributed to a number of factors. Rather than adopting a choice screen, Turkey ensured that OEMs were free to contract with any Google rival to be their exclusive default search engine. Yandex had a strong presence in Turkey, offering a compelling alternative for Turkish OEMs. Finally, Huawei phones were relatively popular in Turkey at a time when US export controls complicated Google's ability to contract with Huawei.[24] The Turkish case resonates strongly with the findings in CMA's previous investigations of general search services: defaults are incredibly important.

In the EU (and the UK), there is no alternative to Google with a similarly strong position to Yandex, nor one which is considered to be the "national" search provider that governments wish to protect or promote.[25] Furthermore, remedies in the EU are shaped by a commitment to the principles of proportionality and subsidiarity,[26] which means that the EU is always likely to try the least intrusive

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[22] Decarolis, Li and Paternollo, "Competition and Defaults in Online Search."
[23] Reuters, "Google warns Turkish partners over new Android phones amid dispute."
[24] Department of Commerce, *Addition of Certain Entities to the Entity List and Revision of Entries on the Entity List*.
[25] European Commission, *Case AT.39740 Google Search (Shopping)*; Höppner, "Antitrust Remedies In Digital Markets"; Decarolis and Li, "Regulating online search in the EU."
[26] Bostoen and van Wamel, "Antitrust Remedies."

option first. As a result of these factors, the effects of European remedies have remained limited, and the Commission has not ordered Google to revise its remedies in relation to Google Shopping. Google voluntarily changed its choice screen in anticipation of the Digital Markets Act.

3. Lessons Learned

There are a number of important lessons to draw from Europe's experiences in designing remedies: (1) delays will be exploited, (2) monitoring is extremely difficult, (3) the investigated firm cannot be trusted to co-design remedies, and (4) choice remedies are insufficient to stimulate competition.[27]

First, time is of the essence in dynamic markets, and large digital firms are likely to employ delay strategies. The investigation in the Google Shopping case began in 2010 and took seven years, while the Android case took three years. Judicial review in the Google Shopping case took another seven years and was only concluded in September 2024, while the Android case is still awaiting a final decision.[28]

The uncertainty for both authorities and competitors can work to the advantage of the regulated firm. If there is uncertainty about whether the case will hold on substantive grounds, competition authorities are likely less inclined to invest significant effort into monitoring and adapting the remedies. After all, these efforts would be wasted if the case is to be thrown out.

The design of the auctions and choice screens in light of antitrust cases has shown that Google will implement ineffective and clearly suboptimal remedies first and will roll them out slowly. The longer cases drag on without demanding that remedies are adjusted, the greater the harm to competition.[29] Moreover, as digital markets are dynamic, having more time to negotiate the remedies provides the firm with more opportunities to change its business model to circumvent the remedies. To the extent possible, remedies should be designed to anticipate future market developments, and they should have built-in mechanisms for forcing the dominant firm to act.

Second, monitoring is extremely difficult in digital markets. There is information asymmetry between the firms and the competition authority, and it is hard to establish the exact impact of remedies in a timely manner.[30] This is especially the case where the remedies are rolled out over time, so that it is unclear what the total effect of the remedies is across the jurisdiction. In imposing antitrust remedies, the Commission has relied on information provided by the investigated firm to develop remedies. Third parties have raised concerns and shared information to show that these remedies were clearly not effective.[31]

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[27] van den Boom, "Search Markets in Europe."
[28] Chee, "Record EU fine punished Google's innovation, it tells court as it seeks to annul decision"; van den Boom, 'Winners & losers."
[29] Google CEO Sundar Pichai has noted publicly his expectation that the US Google Search antitrust case appeals process will continue on for many years. See Clanton, "Google CEO Sundar Pichai Says Antitrust Trials Could Drag On for Years."
[30] Crémer, de Montjoye, and Schweitzer, "Competition Policy for the Digital Era."
[31] Höppner, "Antitrust Remedies In Digital Markets"; Hink and van den Boom, "The idealo-founder speaks"; van den Boom, "Winners & losers."

Vertical integration adds another layer of complexity to monitoring. It is possible that a certain remedy would be able to address problems in a market absent leveraging by the investigated firm. However, when firms are able to nudge users back to a downstream service by making changes to the design of the upstream service, the effects are harder to identify and the causal link is harder to show between the behavior in one market and the ineffectiveness of remedies in another.[32]

Third, and related, the Commission could not trust the investigated firm to co-design the remedies. By giving the firm discretion, the competition authority gave more space to the investigated firm to abuse the information asymmetry that exists between the regulator and the regulated. Competitors of the investigated firm generally have a clearer understanding as to how the behavior in question harms competition, and what would be effective ways to remedy it. In designing remedies, especially where harms are grave, input by third parties should be prioritized over input by the investigated firm itself.[33]

Fourth, and finally, offering choices to consumers is insufficient, especially when the investigated firm can still nudge behavior towards its own services. Consumers have proven prone to defaults and path dependency. Moreover, large digital firms have strong brands that inspire brand-loyalty among consumers. Merely giving users the opportunity to pick another default is likely insufficient. Experiences in Russia and Turkey do not translate well due to nation- and market-specific factors.[34]

Together, these experiences show that using one-off remedies that are effectively cease-and-desist orders for the anticompetitive behavior in question and only focused on one market or the connection between two markets will produce limited effects.[35] To ensure the effectiveness of remedies, the regulator needs to use a "remedy package" that addresses a variety of links and design choices, including structural remedies to ensure fair treatment between different suppliers.

B. Digital Markets Act

The Digital Markets Act (DMA) came into force in March 2024. It is the EU's attempt to address the shortcomings of EU antitrust law.[36] The ex ante rules imposed on large digital firms – so-called gatekeepers – are designed to enable the Commission to act quickly without having to investigate a complex set of facts.[37] Moreover, the use of the concept of "effective compliance" gives the Commission discretionary space in deciding whether a gatekeeper has insufficiently adhered to the ex

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[32] Feasey and Krämer, "Implementing effective remedies for anti-competitive intermediation bias on vertically integrated platforms."
[33] Höppner, "Antitrust Remedies In Digital Markets"; European Commission, *Case AT.39740 Google Search (Shopping)*.
[34] Decarolis and Li, "Regulating online search in the EU"; Decarolis, Li, and Paternollo, "Competition and Defaults in Online Search."
[35] Bostoen and van Wamel, "Antitrust Remedies."
[36] European Union, *Digital Markets Act*.
[37] Podszun, "Digital Markets Act: Article-by-Article Commentary."

ante obligations.[38] Under the DMA, the burden of intervention rests on the gatekeeper: the firm itself must prove that its compliance is effective.

The DMA tries to resolve anti-competitive behavior by regulated firms through a holistic approach that spans across different services in the value chain.[39] For Google, eight services have been designated as core platform services, including Google Search, Chrome, Android, and Google Shopping.[40] This approach recognizes the reality that large firms operating in many adjacent markets simultaneously can leverage market power up and down the value chain.

Such an integrated approach should be lauded, as the Android and Shopping cases have shown that Google will attempt to steer users towards search from its upstream services, and use search to capture downstream markets by leveraging its power. In digital markets, no service or product market can be viewed in isolation, as complementarities and economies of scope create ample opportunities for leveraging and market entry, while the informational power of platform operators facilitates user steering. It is critical for the CMA to understand in detail the dependencies between products and services throughout the entire vertical chain in order to craft remedies that lower barriers to entry.

The most relevant DMA provisions for Google Search are the following:

- Art. 6(3), which mandates choices for search and browser defaults, requires default settings to be easily changed, and requires easy uninstallation of software;
- Art. 6(11), which mandates that gatekeeper search engines offer competitors access to ranking, click, and query data under FRAND terms;
- Art. 6(5), which prohibits self-preferencing;
- Art. 5(2), which prohibits combining personal data from different core platform services absent user consent; and
- Art. 5(9), which requires pricing and fee transparency for advertisers.

The stated purpose of the DMA is to create fair and contestable markets.[41] In these early stages of implementation, DMA enforcement has not primarily focused on improving competition *for* the markets in which gatekeepers' core platform services exist. Instead, enforcement has been focused on stimulating competition *in* the market in a way that produces fair outcomes that are beneficial to consumers, and where entry is not unduly hindered.[42]

In practice, therefore, the combination of the provisions listed above address some of the ways in which Google abuses its market power in search, but not all. The DMA attempts to achieve its goals by requiring choice, data sharing with rivals, an end to self-preferencing, limits on data combination, and pricing transparency, but does little to address exclusionary distribution deals. The data sharing

[38] Ibid.
[39] Schweitzer, "The Art to Make Gatekeeper Positions Contestable and the Challenge to Know What Is Fair."
[40] European Commission, *Summary of Commission Decision of 5 September 2023 relating to a decision pursuant to Article 3 of Regulation (EU) 2022/1925*.
[41] Ibid.; Crémer et al., "Fairness and Contestability in the Digital Markets Act"; European Union, *Digital Markets Act*.
[42] Ibid.

provisions are limited and do not extend to syndication. There is much that can be learned from the implementation of the DMA, but the digital markets competition regime in the UK affords the CMA a broader toolkit and more flexibility than what the DMA provides. .

The effectiveness of the DMA in achieving its objectives is as of yet unknown. What the gatekeepers' behavior demonstrates thus far is that regulating digital firms through behavioral remedies seemingly always results in a game of whack-a-mole. Gatekeepers can game the limited resources available to competition authorities by being noncompliant to varying degrees across different services, dispersing the authority's attention and resources. The Commission has been quick to open noncompliance investigations in the most egregious cases. Yet it is likely that all decisions by the Commission related to noncompliance will be fought in court, leading to further delays. If the Commission finds noncompliance in three decisions issued over eight years against a gatekeeper, only then can it start using structural remedies.[43]

The DMA should be a source of inspiration for the CMA when it comes to oversight and enforcement. The DMA requires gatekeepers to write compliance reports and publish non-confidential summaries. As long as the Commission requires that these be sufficiently detailed and treat incomplete reports as noncompliant, these reports can help to address information asymmetries and support public accountability.[44] The Commission has the choice between letting the gatekeeper attempt compliance, potentially resulting in a noncompliance decision, or using implementing acts to directly specify what a gatekeeper must do.[45] Having the choice strikes a balance between having the state fully design a remedy and letting the gatekeeper choose a remedy under a reversed burden of proof with the risk of significant penalties.

Ultimately, the DMA provides fertile ground in which to exercise enforcement capabilities directed at digital markets and attendant to the specific characteristics of those markets. The CMA as it continues its scrutiny of general search services should learn what it can from the DMA's design and early implementation, but appreciate that in the context of search it has an opportunity to adopt a more functionally comprehensive remedy package.

Guidance for Effective Remedy Design (Questions 4 and 5)

Q4: Do you have views on whether barriers to entry and innovation, abuse of market power, and exploitative conduct are the right issues for the CMA to focus on, or whether there are others we should consider?

[43] European Union, *Digital Markets Act*, Article 18(3).
[44] Crémer et al., "Enforcing the Digital Markets Act"; European Union, *Digital Markets Act*.
[45] European Union, *Digital Markets Act*.

Q5: Do you have views on whether the potential interventions are likely to be effective, proportionate and have benefits for users, including consumers and business search users? Are there other measures the CMA should consider that would be more effective or proportionate, or that would deliver greater benefits for users?

When analyzing the existing research, evidence, and remedy proposals, two key themes of remedial design emerge: (1) the need to actively jump start search competition, and (2) the need for interlocking, mutually reinforcing remedies.

For many years Google has maintained default status on a dominant set of search access points and thereby maintained its monopoly power in general search services. This sustained advantage has had cumulative effects: competition has been virtually eliminated as consumers formed habits around the use of Google Search and grew to associate it synonymously with online search, to the point where "googling" has become a verb. Google grew its user base such that most queries are directed at Google, providing it with rich data used to improve its product, and has obtained a virtual monopoly share of revenue from online searches. All of this means that restoring competition in online search must go beyond simply halting Google's conduct that has so far foreclosed its rivals from accessing key channels of distribution.

Merely enabling a rival search engine to appear alongside Google, be placed on a choice screen, or even to replace it as the default on some search access points will be insufficient to restore effective competition. It will take time and a significant investment of resources for Google's rivals to build their own brand value, improve their quality, and be perceived as compelling alternatives in the eyes of consumers and advertisers. Most consumers have developed deep experience and familiarity with using Google, so inertia will continue to guide their choice of search engine, raising barriers to switching that dampen the prospects of potential entrants.

As such, any remedies package should seek to *jump start* competition by enabling competing search engines to quickly achieve parity with Google in terms of quality and reputation and to build on that foundation going forward.[46]

To realize this goal, a potential remedy package must recognize the interlocking, mutually reinforcing nature of the market conditions in which Google and its rivals operate. No search engine can operate without access to a web index and algorithms to rank and return results to users. Those results cannot improve in quality without user data. Users who generate that data cannot be reached without access to distribution channels and the opportunity to build a brand. None of this can take place without the search engine monetizing the results.

A successful package of remedies must address this interlocking dynamic. It is insufficient to open up distribution without addressing the data and quality disadvantages created by Google's conduct. It is unrealistic to expect consumers to switch merely because rivals appear, without measures that

[46] Romaine and Salop, "Preserving Monopoly"; Salop, "What Is an Effective Remedy in the Google Search Case?"; Shapiro, "Microsoft: A Remedial Failure."

strengthen their awareness of their choices, ability to experience competing search engines, and brand and quality changes over time.

A package of remedies aimed at distribution, quality improvement through data access, choice, and public education is needed to achieve the goals set out in the CMA's invitation to comment. These remedies will be more effective by working together, and the absence of any one would weaken if not eliminate the likelihood of restoring effective competition.

A. Contractual Prohibitions and Non-Discrimination Product Requirements

Google's distribution contracts are central to the issue of defaults. Commentators have suggested a wide variety of potential contractual changes seeking to end or limit Google's contracts with partners for exclusives, defaults, preinstallation, and preferential placement, with or without accompanying revenue sharing.[47] Notably, these proposals vary in their approach to revenue sharing, with some proposing to prohibit revenue sharing between Google and partners entirely, cap the revenue sharing percentage, cap the share of users whose searches can contribute to the revenue share, or address other contractual provisions without addressing revenue sharing.

Regardless of the specific contractual restrictions the CMA may choose to impose, there are a number of safeguards that are essential for any contractual remedies to be effective. First, a contractual remedy should address all search access points, and should not assume that the common search access points of today (browser, OS, mobile apps, virtual assistants) will be the same in the future. Natural language interfaces to online services, including search, should be expected to continue their current trajectory of rapid evolution. A durable remedy would address search access points broadly.

Second, the category of "all search access points" should be understood to include access points that rely on Google Search assets even if the product to which they provide access is not branded as a search product. For example, if Gemini or other AI models that Google develops and deploys rely on Google's web index or search data for training, testing, retrieval-augmented generation (RAG), or other purposes, those should be considered to be search access points to which contractual prohibitions apply. This is an important scoping consideration to ensure that contractual prohibitions effectively limit Google's control over search distribution channels even as the user-facing experience of what we currently understand as "search" continues to evolve, and to ensure that the prohibitions are not circumvented by Google's product changes or branding choices.

Third, if contractual prohibitions are not coupled with prohibitions on Google self-preferencing Google Search in its own products, Google could use those products as avenues for monopoly maintenance

[47] Berjon and Caffarra, "'Google is a Monopolist' – Wrong and Right Ways to Think About Remedies"; Competition and Markets Authority, "Appendix V"; Decarolis, Li, and Paternollo, "Competition and Defaults in Online Search"; Heidhues et al., "More Competitive Search Through Regulation"; Hovenkamp, "The Competitive Effects of Search Engine Defaults"; Munir et al., "Google's Chrome Antitrust Paradox"; Salop, "What Is an Effective Remedy in the Google Search Case?"; Scott Morton et al., "Judicial Remedies To Restore Competition in the Market for General Search"; Segal, "To redress Google's search monopoly misconduct, strong remedy is needed"; Sharma, "An analysis of potential remedies to address Google's search monopoly"; Weinberg, "Creating Enduring Competition in the Search Market."

going forward. Google Chrome plays a central role in narrowing distribution channels and delivering query share to Google, but Google's other apps, Pixel and other devices, Gemini, and future services that rely on or steer users towards Google Search should all be considered for self-preferencing prohibitions because they can serve as levers to reinforce Google's dominance in search. Specifically, in the context of generative AI, the CMA should recognize that Gemini and other models trained on search assets were created from the fruits of a monopoly (both index and data). One way to limit Google from leveraging its search monopoly into generative AI would be to limit or prohibit Google's AI products from using search-related data or assets going forward.

Fourth, partners entering into contracts with Google Search need the freedom to deploy Google functionalities as they see fit. There are numerous ways in which Google's current contracts encumber its partners, for example, by preventing them from preinstalling alternative search engines, sourcing ads from third parties, or serving their own search results or ads.[48] If these kinds of contractual limitations are not prohibited (whether as conditions for exclusives, defaults, preinstallation, preferential placement, or revenue sharing), they will amount to Google retaining its ability to shape the search market, the search ads market, and the search experience given its current market power.

Fifth, the reality is that changes to Google's contracts will affect businesses in the markets adjacent and connected to search: browsing, mobile devices, advertising, web publishing, generative AI, and more. Some of these markets already experience concentration, for example, in the provision of browser engines that serve as the core software component in web browsers.[49] Especially when it comes to revenue sharing agreements, there are unavoidable tensions in remedy design insofar as these agreements serve to limit entry in search while providing revenue that allows competing browsers (and browser engines) or OEMs to offer higher quality or lower cost products, or to stay in the market at all.[50] If the CMA chooses to consider contractual remedies, the approach it takes should reflect the downstream impacts of contractual changes on adjacent markets.[51]

Finally, when considering contractual prohibitions related to Android, the history lesson from the EU is clear: because of OEMs' complete dependence on Android and the popularity of Google apps, prohibitions that limit the kinds of contracts between Google Search and OEMs are insufficient to open up mobile search distribution. The restrictions imposed on distribution agreements, revenue-sharing agreements, and anti-fragmentation agreements between Google and OEMs were not enough to affect Google's market share in any meaningful way.

Google's behavior related to the EU restriction on anti-fragmentation agreements demonstrates how Google uses the dominance of Android and the popularity of Google apps to perpetuate the status

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[48] Mehta*, Memorandum Opinion*, paras. 305, 309, 370-372, 385-390.
[49] Competition and Markets Authority, "Mobile Ecosystems"*:* Mozilla, "Five Walled Gardens."
[50] Scott Morton et al., "Judicial Remedies To Restore Competition in the Market for General Search."
[51] For discussion of the potential impact of certain contractual restrictions on competing browsers, see Australian Competition and Consumer Commission, "Digital platform services inquiry"; Berjon and Caffarra, "'Google is a Monopolist' – Wrong and Right Ways to Think About Remedies"; Competition and Markets Authority, "Appendix V"; Sharma, "An analysis of potential remedies to address Google's search monopoly."

quo. When the anti-fragmentation agreements were prohibited, Google replaced them with Android Compatibility Commitments. Under these commitments, Google will only enter into a Mobile Application Distribution Agreement (MADA) for devices that adhere to Google's standards for Android, and will only license Google apps to OEMs that comply with the commitments.[52] This means that there is effectively an anti-fragmentation agreement applicable to any device that operates at least one Google application. OEMs are free to develop other devices that use Android, but they cannot use any of Google's other apps, including the ubiquitous YouTube and highly sticky apps such as Gmail. Anti-fragmentation agreements and Android compatibility commitments are essentially interchangeable because they have led to the same effect in the market. So far, no successful forks have appeared in the EU.

Several existing proposals suggest a structural remedy as a means to address the problem of restoring search competition in light of the OEMs' dependency on Android. The next section reflects on considerations for structural remedies for Android and other parts of Google's business.

B. Structural Remedies

1. Android

Existing proposals discuss two primary structural approaches to Android: (1) functional separation, in which Android would be housed within Alphabet as an internal subsidiary whose employees, assets, and communications are closed off from the parent company, and (2) a spin-off of Android into an independent, separate company.[53] Any structural remedy for Android should meet two objectives: eliminate incentives for Android to favor Google Search and make it possible to observe attempts by Android to evade compliance by favoring Google Search.

The functional separation approach is not designed to meet these two objectives simultaneously. Decoupling the incentives of the subsidiary from the incentives of the parent would require extensive, strict internal controls affecting every aspect of both entities' operations, including personnel, compensation, infrastructure, research and development, legal, finance, and more. Any corporate governance structure is unlikely to help safeguard a subsidiary whose incentives and objectives may be misaligned or even adverse to its parent company. Google's own experience of functionally separating Google Shopping in Europe – where competition failed to emerge – serves as a proofpoint of some of the difficulties of the functional separation approach.[54]

This leaves the spin-off as the preferred structural approach. To eliminate incentives for favoritism, however, a spin-off would need to be coupled with behavioral remedies that prevent recreating the tie

[52] Competition and Markets Authority, "Appendix V."
[53] Heidhues et al., "More Competitive Search Through Regulation"; Salop, "Why an Android Divestiture Is a Necessary Google Search Remedy", Scott Morton et al., "Judicial Remedies To Restore Competition in the Market for General Search"; Sharma, "An analysis of potential remedies to address Google's search monopoly"; Wu, "What Should We Do About Google?".
[54] Hink and van den Boom, "The idealo-founder speaks."

between Google Search and Android that exists today. Thus, structural and behavioral remedies should not be viewed as alternatives, but as a package that only works if both are adopted together.

There are multiple different types of behavioral restrictions needed for a spun-out Android to effectively stimulate competition. Contractual prohibitions restricting Google's agreements with the spin-off would obviously be necessary.[55] Line of business restrictions on both entities would also be required until competition is restored so as to avoid Google moving back into the mobile OS market and Android moving back into the search market.[56] Similar to the concerns discussed above related to contractual prohibitions, both types of restrictions need to be carefully crafted to account for changes underway in the search market as a result of generative AI. Prohibitions concerning search should be scoped to include products and businesses that rely on search assets even if they are not branded as search. Google is already offering preferential access to its own on-device AI model on certain handsets.[57]

Layering these behavioral remedies together with the spin-out also would also provide important defenses against potential future accumulation of dominant positions by other players in the search and mobile OS markets. Consumers would be right to be concerned if a spun-out Android were an immediately desirable acquisition target for Microsoft (already in the search market) or Apple (possible entrant into the search market), for example. The same line of business restrictions that prevent Android from recreating Google's monopoly position by vertically integrating search with the OS would limit the ability of another large search player to do so. Requiring the spin-out to maintain Android as open source software, to maintain it under a permissive licensing regime (as happens today with its Apache 2.0 license), to explicitly allow forking, and to license it at FRAND rates would be additional checks against this concern that the CMA could consider enforcing, and that could potentially be imposed in perpetuity as competitive protections kept in place after the line of business restrictions expire. Furthermore, the actions of the Android spin-out must continue to be subject to the CMA's ongoing, vigilant policing of monopolization.

There are numerous examples of thriving businesses – and nonprofits – that are not monopolists that securely operate critical open source software tools used by millions or billions of internet users worldwide everyday.[58] The behavioral remedies described above would have the Android spin-out operate in a fashion typical of many other software organizations. Moreover, Google's current anti-forking restrictions are highly unusual in the open source software industry. Requiring the Android spin-out to explicitly allow forking would bring it in line with typical practice for both commercial and non-commercial open source software.

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[55] Salop, "What Is an Effective Remedy in the Google Search Case?"
[56] Scott Morton et al., "Judicial Remedies To Restore Competition in the Market for General Search."
[57] Google, "Get started with Gemini Nano on Android (on-device)."
[58] A good example is the Linux operating system, which for nearly 35 years has powered computing infrastructure from servers to supercomputers to mobile devices, and from which Android itself is derived. There are similar prominent examples across every layer of digital and internet infrastructure and applications: FreeBSD, the Apache HTTP Server, Nginx, BIND, OpenSSL, Ruby on Rails, Let's Encrypt, GNU Mailman, Firefox, and thousands of others.

It is clear from Google's behavior in response to competition policy enforcement in other jurisdictions that reinforcing the search monopoly has been one motivator for Google to enforce anti-fragmentation agreements that supersede the terms of the software license itself. Given the role of economies of scale and network effects in shaping both the search and OS markets, applying strong behavioral remedies to the spin-out can help avoid recreating in the future the same conditions that spurred the CMA's investigation in the first place.

Spinning out Android would make future attempts at favoritism more observable because they would have to rely on agreements of some kind between the spin-out and Google. While the relationship between the two companies would require ongoing oversight from the technical committee (described in Section VI), communications and agreements between the two independent entities would be much more easily observable than in the case of a subsidiary.

2. Chrome

There are many ways that Google uses Chrome to strengthen its position in search and vice versa. Beyond contractual bundling, Google steers users self-preferentially in both directions – from Chrome to Google Search and from Google Search to Chrome – while also enhancing search through the collection of browsing data.[59] Unlike Safari and Firefox, Chrome has been unwilling to restrict the use of third-party cookies, having spent years delaying and finally abandoning previously announced plans to do so.[60] While competition concerns have centered on how Chrome restricting third-party cookies might give Google a relative data advantage compared to its ad tech competitors, the company's ultimate unwillingness to restrict third-party cookies could instead (or additionally) be viewed as a reinforcement of its search monopoly, insofar as it allows Google as a third-party provider of ads and analytics on large swaths of the web to continue to collect rich data about websites to index and rank. Internal Google documents leaked in early 2024 provide indications that Google uses Chrome data to guide its indexing processes and optimize its ranking algorithms.[61] Additional investigation may well demonstrate other ways in which Chrome is a critical tool for monopoly maintenance.

A number of commenters have called for a structural remedy that addresses Chrome, or Chrome together with Android.[62] Although the ecosystem dynamics differ between Chrome and Android, the objectives of a structural remedy for Chrome would be the same: to eliminate the incentives for Chrome to favor Google Search (and vice versa), and to make attempts at favoritism observable. The analysis above about the relative merits of a spin-out as compared to an internal subsidiary apply equally to Chrome as they do to Android. Moreover, web browsers and web services are deeply intertwined. The technologies and interfaces that browsers afford – including cookies and other

[59] Berjon and Caffarra, "'Google is a Monopolist' – Wrong and Right Ways to Think About Remedies"; Competition and Markets Authority, "Appendix V"; Scott Morton et al., "Judicial Remedies To Restore Competition in the Market for General Search."
[60] Lomas, "Google's latest Privacy Sandbox gambit could pit user choice against tracking."
[61] Fischer, "How Google Search ranking works"; Sato, "The biggest findings in the Google Search leak."
[62] Berjon and Caffarra, "'Google is a Monopolist' – Wrong and Right Ways to Think About Remedies"; Munir et al., "Google's Chrome Antitrust Paradox"; Scott Morton et al., "Judicial Remedies To Restore Competition in the Market for General Search"; Segal, "To redress Google's search monopoly misconduct, strong remedy is needed"; Wu, "What Should We Do About Google?"

storage technologies, browser APIs, and other features – shape how search, ads, and other services can be delivered by Google and its rivals. Chrome has already built in preferential access to Google's proprietary AI models,[63] and work is underway to broaden access to browser APIs that would drive ever more traffic to those models.[64] Overseeing the myriad ways in which all of these interlinking relationships might be used by Google to favor its internal Chrome subsidiary or by the subsidiary to favor Google Search, directly or indirectly, would be a daunting task.

As in the case of Android, combining a Chrome spin-out with behavioral remedies can help address concerns about a spun-out Chrome potentially being acquired by a large browser competitor or otherwise contributing to erosion of competition in the browser market. Line of business restrictions that prevent Google from re-entering the browser market and prevent the spin-out from entering the search market until competition is restored would simultaneously support the competitive process in both the search and browser markets. Requirements that the spin-out maintain Chromium as open source software with a permissive licensing regime in perpetuity would further safeguard the ecosystem of competing browsers that rely on Chromium after the line of business restrictions expire.

3. Other structural approaches

A number of other structural remedies have been proposed, including divesting Google's web index into an independent entity or functionally separating Google Search from other parts of Google.[65] We do not analyze these ideas further here, but the observations above about the relative merits of spin-outs compared to internal subsidiaries and the need to couple structural relief with specific behavioral prohibitions are worthy guideposts should these other ideas be pursued.

C. Choice Remedies

Choice remedies aim to facilitate the ability of users to actively make informed decisions about which search engines they use and select as their default. Robust literature has documented how behavioral factors, such as default effects, status quo effects, information overload, and choice fatigue can exert a strong influence on consumer behavior.[66] Choice remedies are generally imposed in order to prevent choices from being presented in a way that takes advantage of these behavioral factors to undermine competition.

Despite a poor track record, one type of choice remedy – the choice screen – continues to receive significant attention and interest from policymakers and researchers.[67] Studies have specifically

[63] Baheux and Klepper, "Built-in AI | AI on Chrome."
[64] Denicola et al., "Writing Assistance APIs Explainer"; HM et al., "Explainer for the Prompt API."
[65] Berjon and Caffarra, "'Google is a Monopolist' – Wrong and Right Ways to Think About Remedies"; Crémer et al., "What We Learn About the Behavioral Economics of Defaults From the Google Search Monopolization Case"; Murthi and Prelovac, "Dawn of a new era in Search."
[66] Fletcher and Vasas, "Implementing the DMA."
[67] Akesson et al., "Can browser choice screens be effective?"; Berjon and Caffarra (2024) '"Google is a Monopolist" – Wrong and Right Ways to Think About Remedies'; Brave Browser, "How Choice Screens Affect Your Browsing & Search Experience", Competition and Markets Authority, "Appendix V"; Decarolis, Li, and Paternollo, "Competition and Defaults in Online Search"; European Union, *Digital Markets Act*; Ostrovsky, "Choice Screen Auctions"; Petrie, "Beyond Choice Screens"; Scott Morton et al., "Judicial Remedies To Restore

evaluated how choice screens affect consumer selection of search engine,[68] building on decades of behavioral research into choice architecture.[69] The lessons identified by the specific search engine studies and the broader knowledge base should inform the implementation of any choice remedy imposed in the UK.

Lessons from the early implementation of the DMA are also instructive. The DMA's choice obligations are in some ways extremely specific (for example, choice must be provided "at the moment of the end users' first use of an online search engine, virtual assistant or web browser") and in other ways open to wide interpretation.[70] This has allowed gatekeepers to roll out choice screens in an inconsistent way, to different parts of the user base at different times, with differing levels of information about the choices being offered.[71] Changing default settings on some platforms also continues to be an onerous process.[72]

1. Effective choice architecture

Because of the amount of attention that has been paid to choice remedies, a robust framework for their design can be readily assembled.[73] The CMA's own evidence review is highly instructive here.[74] If the CMA pursues a choice remedy, it will be important to adopt and make legally binding the set of design principles that are widely recognized as best practices for designing choice architecture in the context of online search. The full KGI workshop report discusses these principles in detail, synthesized from prior research.[75]

Competition in the Market for General Search"; Sharma, "An analysis of potential remedies to address Google's search monopoly"; Vásquez Duque, "Active Choice vs. Inertia?"; Weinberg, "Creating Enduring Competition in the Search Market."

[68] Akesson et al., "Can browser choice screens be effective?"; BEUC, "Examining the Design of Choice Screens in the Context of the Digital Markets Act"; Competition and Markets Authority, "Appendix V"; DuckDuckGo, "Search Preference Menu Immediately Increases Google Competitors' Market Share by 300-800%"; Petrie, "Beyond Choice Screens."

[69] Competition and Markets Authority, "Evidence review of Online Choice Architecture and consumer and competition harm."

[70] European Union, *Digital Markets Act*, Article 6(3).

[71] Mukherjee et al., "Exclusive: EU's new tech laws are working; small browsers gain market share"; van den Boom and Hinck, "Conference Debrief – Highlights from the ECN DMA Workshop."

[72] Authority for Consumers and Markets, "ECN Digital Markets Act Conference 2024."

[73] Akesson et al., "Can browser choice screens be effective?"; BEUC, "Examining the Design of Choice Screens in the Context of the Digital Markets Act"; DuckDuckGo, "Search Preference Menu Immediately Increases Google Competitors' Market Share by 300-800%"; Fletcher, "Choice Architecture for End Users in the DMA", Petrie, "Beyond Choice Screens."

[74] Competition and Markets Authority, "Evidence review of Online Choice Architecture and consumer and competition harm."

[75] Cooper, van den Boom, and Arnao, "Considerations for Effective Search Competition Remedies," 20-22.

2. One click to switch

One of the key insights from the workshop is that interventions featuring choice remedies should not be limited to a mere "screen" or a singular point in time. Rather, a choice remedy should support consumers at each stage of their journey and ensure space to explore choices in different ways.[76]

One promising way to support this would be to require that competition be literally one click away across all search access points. This would be a mandatory reduction in friction for any time a consumer wants to switch, not limited to a screen that only appears occasionally.

3. Market testing

Google's proposals for how to meet any choice requirements imposed by the CMA should be market tested. The process of testing any choice remedy before and after rollout should receive oversight and be conducted with input obtained via a formal stakeholder consultation process that involves all interested parties, including search rivals, platform providers, independent experts, and consumer and user representatives. Market testing should begin with a formal consultation process for these stakeholders to offer their perspective and help decide which aspects of design to test, which metrics to record, and which populations to examine. At the final stage, results should be evaluated prior to approval for deployment and on an ongoing basis afterwards.

4. Public education

Ultimately, it is important to recognize that consumer behaviors are heterogeneous and sticky. Even when combined with other remedies, choice remedies will not be able to perfectly sort consumers into the search engine that "best" reflects their preferences. While Google has one of the world's most recognizable brands, many of its competitors are largely unknown to consumers. Familiarity with Google will shape consumer preferences for years to come.

In addition, any choice remedy will likely receive at least some consumer backlash regardless of its timing, frequency, presentation, and the degree of agency reserved for users. Google's brand value sets a functional limit on the ability of choice architecture to influence consumers, even accounting for other aspects of human behavior.[77] An important long-term endeavor will be increasing the salience of brands that compete with Google.

As such, public education is a key complement to any choice remedy. Requiring Google to engage in advertising campaigns about the availability of search choices will be necessary in addition to any choices that are offered.

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[76] For instance, in the context of choice screens for browsers, Mozilla has developed the creative idea of an "App Store Quiz" permitting consumers to explore various options and learn whether they suit their preferences. See Petrie, "Beyond Choice Screens."

[77] Allcott et al., 'Sources of Market Power in Web Search."

Search engines are experience goods, which means consumers may struggle to evaluate the quality of a search engine without direct exposure to it.[78] At a minimum, this reality should shape how the effectiveness of a new choice regime is evaluated, recognizing that search engine quality and consumer perceptions of that quality may take a long time to change. Alternatively, a choice remedy could attempt to induce consumers into actually experiencing alternative search engines, which may also speed changes in perception.[79] Rivals themselves may want to offer incentives or rewards to get users to switch, which should be allowable under any remedy framework.

D. Accumulation and Use of Data

A wide variety of potential remedies have been suggested that would give rivals access to search data accumulated and developed by Google.[80] These proposals focus on one or more categories of data and suggest a range of potential data sets and access types that a remedy could address:

- Web index: Google's core index covering web documents as well as more specific indexes for particular content types (e.g., images) or specialized verticals

- Query data: Google search queries, potentially together with data about query results, clicks, ranking, approximate user location data, and other query metadata

- Ranking signals: selection from potentially hundreds of different ranking signals and features (e.g., click-through rate, bounce rate, dwell time, query-based salient terms, etc.) that Google uses as inputs and outputs of dozens of different ranking algorithms and components to produce each set of search results[81]

- Search results: what gets displayed on the search engine results page (SERP) in response to a query, potentially including organic results, URLs, web page snippets, specialized modules, and module content (e.g., videos, news, weather, stocks, etc.), as well as metadata

- Ads: ads and sponsored results that get displayed on the SERP, potentially including snippets, thumbnails, and other content that appears as part of the ad feed, as well as metadata related to ad pricing or performance.

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[78] Ibid.

[79] To that end, one proposal is to randomize the search engines initially set as default for users. See Vásquez Duque, "Taking Behavioral Antitrust Seriously" and Vásquez Duque, "The Potential Anticompetitive Stickiness of Default Applications."

[80] Berjon and Caffarra, "'Google is a Monopolist' – Wrong and Right Ways to Think About Remedies"; Competition and Markets Authority, "Appendix V"; Cowen, "How to Make the Remedy in the Google Search Case Future Proof", Heidhues et al., "More Competitive Search Through Regulation"; Martens, "The impact of search engine data sharing on competition and consumer welfare"; Murthi and Prelovac, "Dawn of a new era in Search"; Scott Morton et al., "Judicial Remedies To Restore Competition in the Market for General Search"; Sharma, "An analysis of potential remedies to address Google's search monopoly"; Weinberg, "Creating Enduring Competition in the Search Market."

[81] Fischer, "How Google Search ranking works"; Fishkin, "An Anonymous Source Shared Thousands of Leaked Google Search API Documents with Me; Everyone in SEO Should See Them"; King, "Secrets from the Algorithm."

Data sharing between software systems very commonly occurs via Application Programming Interfaces (APIs). APIs provide a programmatic interface that one party can call to fetch data from another party. APIs can be used to fetch data for one-time requests or in bulk, and depending on the remedy approach, Google may be able to provide access via existing APIs, or it may need to create new ones. Technically, bulk data could alternatively be shared manually or via some file-sharing mechanism, but APIs offer advantages for building software to programmatically retrieve the data and authenticate the entities requesting the data.

The remainder of this section will focus on the first four categories above, leaving specific analysis of remedies addressed at search advertising to other venues. However, many of our general observations may be applicable to ad syndication.

1. The Role of Quality and the Need for Further Investigation

Many access remedy proposals are motivated by a desire to allow search rivals to quickly achieve a higher quality search experience that has heretofore been out of reach as a result of Google's conduct. Although some empirical analysis has been conducted on the basis of proprietary or public data to examine the relationship between data, scale, and search quality,[82] additional analysis that offers a better understanding of the relationships between these factors and user searching/switching behavior would be useful to assess data access remedies.[83] Many of the questions that are not immediately answerable or generalizable from the published literature might benefit from further investigation by the CMA, including collection of additional evidence from competing search engines.

In particular, it would be useful to identify which negative aspects of quality correlate with or cause user switching behavior. Quality is subjectively defined and may relate to different features of a search product for different user populations. For a given subjective definition of quality, can the difference be quantified between the impact of poor quality causing users to switch away from a search engine compared to the impact of high or improved quality causing users to switch to a search engine? Little public data exists from the field to help answer this kind of question because Google has controlled distribution channels for so long, and switching search engines is not easy in general. Further research may help to shed some light.

There are several other questions about the relationships between data, quality, scale, and user behavior that would benefit from additional investigation:

- the relationship between a search engine's overall query share, share of long-tail queries (possibly of different types), and quality (subjectively defined) or user retention;

- quantification of the importance of query reformulation to user retention, and identification of what data is needed at what scale to be able to meet the bar for query reformulation; and

- how the availability of individual SERP modules and the content they contain affects user perceptions of quality and/or switching behavior.

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[82] See, e.g., Allcott et al., 'Sources of Market Power in Web Search"; Schaefer and Sapi, "Complementarities in learning from data."

[83] There is a clear relationship between quality and data. See Competition and Markets Authority, "Appendix I."

Having clearer or more generalizable evidence about these questions would help to determine:

- which categories of data to focus on with data access remedies;

- the constraints placed on those remedies, including who is allowed to have data access, at what level of granularity, for how long, and under what licensing conditions; and

- what to expect as far as the competitive effects on both search rivals and advertisers of requiring Google to provide data access of different kinds.

For this reason, the remainder of this section does not take a position about exactly which access remedies are likely to be most effective, but explores considerations for successfully crafting remedies depending on the type of access remedy the CMA chooses to adopt, if any.

2. Precision

One of the key lessons of the DMA's click-and-query data sharing provision is the need for data access remedies to be very precise about exactly which data Google is required to license, in what forms, at what granularity, and at what scale of timeliness. The DMA requires the sharing of "ranking, query, click and view data in relation to free and paid search,"[84] a definition that has allowed Google to exploit its vagueness in numerous ways. Google excludes most queries on privacy grounds, makes the data available months after it has been collected, and charges €3 per 1,000 queries[85] (likely orders of magnitude more than what it costs), limiting its utility for rivals looking to improve their own quality or indexes.[86] The need for precision will manifest in numerous different ways depending on the specific data that an access remedy may target:

- Index: Which indexes or index components are to be included. Beyond web documents, an access remedy would need to specify whether specialized indexes or components used specifically for images, videos, maps, local business sites, retail, travel, and many more are to be covered by the remedy.

- Query data: An access remedy would need to specify the timeliness of query data sharing (e.g., updated daily or at some other frequency), which relates to whether the data would be useful for rivals to respond to fresh/live long-tail queries; permissible privacy protections (discussed further below); what user behavior data associated with each query is included (click, click-back); what query metadata is included; whether approximate user location data (which is valued for mobile and local queries) is included; and whether queries are aggregated or offered individually.

- Ranking signals: An access remedy would need to specify which ranking signals or categories of signals are included and how those signals are selected, and whether individualized signals are provided in real-time on a per-query or per-result basis.

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[84] European Union, *Digital Markets Act*, Article 6(11).
[85] Google, "EU Digital Markets Act (EU DMA) Compliance Report Non-Confidential Summary"; van den Boom and Hinck, "DMA Compliance Workshop – Alphabet."
[86] Weinberg, "Creating Enduring Competition in the Search Market."

- Search results: An access remedy would need to precisely describe which components of the SERP are to be provided.

With respect to search results, Google already distributes search results to syndication partners that enter into syndication agreements. These agreements constrain how syndication partners may use and display search results by, among other things, requiring bundling of results with ads; preventing adding, deleting, or re-ranking of results; restricting partners from augmenting results with rich content; preventing partners from customizing results for particular audiences; and excluding some SERP components (for example, search modules, instant answers, AI-generated summaries, and other features) from syndication. An access remedy focused on search results could therefore build on APIs that Google already provides for syndication,[87] but with tailored requirements to ensure that the remedy is providing rivals with (real-time) access to the data that enables them to compete, rather than being constrained by the many restrictive terms Google currently offers to partners.

Across all categories of access remedies, adopting guardrails around the licensing terms is clearly important. Important guardrails include: specifying the fee structure for data access (cost basis, FRAND, zero cost, or another structure), specifying how FRAND rates should be calculated if FRAND licensing will be used, prohibiting Google from placing specific discriminatory restrictions on how licensees use the data, and requiring usage restrictions that protect privacy and the interests of web publishers. These will all be necessary to ensure that the goals of the remedies are not subverted by Google moving to make licenses unattractive to rivals.

3. Competitive Effects on Firms of Different Types

The type of access remedy chosen will affect the type of firm that is able to become more competitive both immediately and over the longer term.

Large tech firms – both existing competitors (Microsoft) and potential entrants (Apple, Amazon) – are one class to consider. These firms are highly capitalized, already operate multi-billion-dollar digital businesses, operate massive data processing and storage infrastructure, make considerable ongoing investments in developing algorithmic and AI capabilities, have large built-in user bases, have significant advertiser relationships and manage their own ad networks, and, in some cases, already maintain web indexes of their own.

With the existing investments and resources these firms have at their disposal, having access to Google's index and query data may suffice to allow them to develop competitive search products that satisfy both consumers' and advertisers' quality expectations, thereby helping to jump start competition when combined with other remedies. On the other end of the spectrum, an expansive access remedy that provides these firms with fresh, real-time ranking signals and search results might leave little about the internals of Google Search that they would not be able to replicate themselves. Such access may exceed what these firms need to build competitive products in the short or long term.

Smaller competitors (DuckDuckGo, Yahoo, Ecosia, and others) and potential entrants are situated differently. Some smaller search competitors build their own specialized vertical indexes, but overall they are largely reliant on syndication deals with Google or Microsoft that limit the data they receive and

[87] Ibid.

their ability to develop alternative ranking, presentation, and ad strategies. They do not have massive infrastructure or engineering teams dedicated to data processing and development of ranking or targeting algorithms and systems, nor the capital to build such infrastructure and teams. For these firms, an access remedy focused on Google's index or query data may be helpful but still insufficient to spur the development of competitive search products. Their users expect them to be responsive to any query, which requires syndication at the outset.

An expansive remedy providing real-time access to search results, ranking signals, or both would likely be more effective at jump starting competition and entry from these firms. With more expansive access, smaller firms could begin to differentiate the presentation of results and ads in their offerings in the short term while entering a longer term feedback loop where more data would increase their quality, help them gain share, and increase their returns which they could then reinvest in the infrastructure, data processing, and personnel needed to free them from dependence on Google data inputs in the long run.

The ecosystem of generative AI companies and start-ups outside of large tech firms is another class to consider. This group is obviously much more nascent and varied. Large players like OpenAI and Anthropic are spending billions of dollars to develop large language models used for a variety of functions including search-style tasks. Numerous companies are crawling the web to collect data for the purposes of model training and retrieval, but none of them are maintaining a comprehensive web index at Google's scale. Nor do they enjoy the advantages in indexing that Google has obtained through market dominance.

Web publishers go to great lengths to ensure their inclusion in Google's crawling and indexing, including by setting permissive crawl settings for Google and using the Google Search Console to share sitemaps and website changes.[88] Publishers have fewer incentives to take these steps for smaller crawlers, especially as the crawling landscape becomes more fraught based on concerns over intellectual property and remuneration in the generative AI space.[89] Recent deals between Google and publishers that allow Google to be the publishers' exclusive crawler for AI model training further exacerbate this problem.[90] Making Google's index available to be licensed on a nondiscriminatory basis could be particularly helpful in spurring competition at the nexus of search and generative AI.

However, any mandate to license access to the index must also consider the impact on the broader web and publisher ecosystem. Publishers are denying access to AI firms' crawlers because those firms are using the publishers' content to train generative AI models and produce AI outputs without remunerating the publishers, linking to the publishers' sites consistently, or driving traffic back to publishers.[91] If those denials are rendered moot because AI firms can simply license access to Google's index instead, incentives to publish web content will likely continue to erode.

As such, any remedy requiring Google to license its index must be accompanied by strong contractual provisions that align licensees' uses of the data with the same preferences publishers express about their sites being crawled directly. That is, publishers' preferences about whether their content can be

[88] Google, "Google Search Console."
[89] Longpre et al., "Consent in Crisis."
[90] Tong, Wang, and Coulter, "Exclusive: Reddit in AI content licensing deal with Google."
[91] Longpre et al., "Consent in Crisis."

used by a particular AI firm for model training, RAG, or traditional search should attach to their content whether it is indexed directly by Google, accessed via Google's licensed index, or indexed directly by the AI firm's crawler.

4. Pretextual Versus Legitimate Privacy Concerns

Under a mandatory query data sharing regime, Google's incentive to claim an overbroad privacy exception that limits the data available to its rivals is obvious. Yet if it is not done carefully, query data sharing can present real privacy risks. This makes the task of distinguishing pretextual privacy concerns from legitimate ones an important matter to resolve should the CMA impose this remedy.

The history of de-anonymization incidents resulting from search query log data sharing has colored policy discussions about its use as a competition remedy.[92] Even in the presence of query log anonymization techniques that strip all identifiers from query logs that may tie them back to individual users and that disaggregate search sessions such that groups of queries may not be tied to individual users, sensitive and potentially re-identifiable data may still exist in query logs to be shared. Accidentally or purposefully, users search for personal identifiers, login credentials and passwords, uniquely identifying content, map directions, health conditions together with personally identifiable information, and other query content that they may view as sensitive if shared. Researchers and smaller search providers have developed a variety of techniques to mitigate the potential leakage of sensitive data from anonymized logs under different data sharing circumstances.[93]

The need to protect user privacy when instituting query data access has been an overriding concern as both the EU and UK have adopted regulatory regimes that require or contemplate mandatory query data access.[94] As noted above, the construction of the DMA and its click-and-query data sharing provision has allowed Google to design its own privacy approach without formal stakeholder input or expert review, leading to a limited query data sharing offer that has thus far not proven useful to competitors. Google staked out its position along the privacy-utility spectrum without any real opportunity for competitors or domain experts to evaluate it or propose alternatives.

Should the CMA choose to adopt a query data sharing remedy, it should solicit proposals for privacy preservation schemes – from Google, search rivals, and data privacy experts – and conduct a stakeholder consultation process to identify the best approach, including potential licensees of the data, experts in privacy-preserving data sharing, user and civil society representatives, and other interested parties. Rather than simply balancing privacy and competition interests, the CMA should seek solutions to safeguard consumer privacy while realizing to the extent possible the competitive benefits of query sharing. While such an approach might still limit the utility of the data to some degree, it would almost certainly result in a greater amount of data sharing than is currently taking place under Google's implementation of query data sharing provisions of the DMA.

After doing its own analysis and gathering stakeholder input, the CMA could identify one or more workable approaches for Google to adopt, or it could require changes to Google's own proposal. This

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[92] Barbaro and Zeller, "A Face Is Exposed for AOL Searcher No. 4417749."
[93] For a recent overview of some approaches explored in research, see Section 2 of Pàmies-Estrems and Garcia-Alfaro, "On the self-adjustment of privacy safeguards for query log streams." See also Cliqz, "Human Web—Collecting data in a socially responsible manner"; Edelson et al., "Access to Data and Algorithms."
[94] Competition and Markets Authority, "Appendix V"; European Union, *Digital Markets Act*.

could also be an iterative process, allowing licensees to provide additional feedback and analysis after having some experience with the data, as DuckDuckGo has done in the EU.

Conclusion

These comments underscore the complexity of designing effective remedies for search competition. Succeeding in this task will open up a critical gateway to the online information environment used by many millions of individuals every day. A few central principles have emerged as the foundation for crafting remedies that can restore competition and prevent future monopolistic practices.

First, competition will not be restored by simply ending Google's exclusionary conduct. The entry barriers are too great; consumers are too conditioned to using Google; and Google's brand is too strong for this to occur. Rather, affirmative steps are needed to jump start competition in the market for general search services.

Second, remedy packages must be multifaceted and interlocking. Distribution, data access, user choice, and quality improvements are deeply interdependent. A remedy package that omits some components will hinder competitors from entering the virtuous feedback loop where more users, more data, and better quality become mutually reinforcing.

Finally, structural and behavioral remedies must work together. If structural remedies are adopted to address the particulars of the market for general search services and its adjacencies, they will fail unless coupled with behavioral prohibitions and strong oversight.

Should the CMA ultimately designate Google as having Significant Market Status in general search, these principles will be essential to crafting interventions that foster healthy competition in a market that has suffered too long without it.

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