

Appendix V: assessment of pro-competition interventions in general search

Introduction

1. This appendix sets out our assessment of potential interventions aimed at addressing the concerns identified in Chapter 3 regarding the level of competition between general search providers. These concerns include a number of barriers to entry and expansion, such as the extensive default positions held by Google and advantages to scale in cost and data, which together limit the competitive threat faced by Google.
2. We consider potential interventions to promote competition under two main categories:
 - demand-side remedies – aimed at facilitating consumer choice and improving the ability of smaller providers to access consumers; and
 - supply-side remedies – aimed at overcoming scale advantages through the provision of third-party access to data.
3. In the interim report, we set out potential interventions that could help rival search engines overcome the demand-side and supply-side barriers identified in this market, which would improve competitive outcomes for consumers. Many of these proposals were put to us by market participants.
4. We have assessed the benefits and costs associated with these potential interventions, drawing on evidence submitted in response to our interim report, and through further engagement with stakeholders. This assessment is set out below, along with our recommendations regarding which measures should be available within the toolkit of a pro-competition regulatory body – the Digital Markets Unit (DMU). We have set out our reasoning for recommending a new pro-competition regulatory regime in Chapter 7 of this report.
5. In the context of such a regime, the design and implementation of the interventions considered in this appendix would be for the DMU to determine. The purpose of our detailed assessment of options at this stage is: to support the case for urgent reform, by demonstrating that there is a range of interventions that could improve outcomes for consumers; to identify which interventions are likely to have the most beneficial effect and hence which powers government should allocate to the DMU; and to inform the work of the DMU, once it has been established.

Demand-side remedies

6. There is clear evidence that, where a search engine is set as the default option,¹ this search engine retains a higher share of supply than it would have if consumers had made an active choice. Consequently, search engine providers can benefit greatly from being the default search engine on devices and browsers.
7. As explained in Chapter 3, Google Search holds extensive default positions across nearly all UK mobile devices. It also holds significant default positions on desktop devices, through Google Search being set as the default on the Chrome browser. This limits the distribution opportunities for competing search engines and has been consistently described by these parties as a significant barrier to growing their userbase, monetising their operations and improving the quality of their search results.
8. In the interim report, we considered interventions that could address the barriers to expansion created by defaults and help consumers make a more active choice regarding their search engine. In this way, demand-side interventions would improve the ability of smaller search engines to access consumers, either by obtaining default positions themselves or by requiring that users actively select their default search engine by using choice screens. We also considered a range of potential restrictions on the ability to monetise search defaults.
9. The interim report recognised that while such interventions may radically improve other search engines' ability to gain customers and in turn improve their algorithms, this would need to be weighed against any potential adverse effects. This intervention therefore requires careful thought, including whether it would be appropriate to limit any restrictions on the ability to monetise defaults to companies with market power.
10. Having explored these issues further, we have identified three key considerations when assessing such an intervention: (i) whether to limit Google's ability to acquire defaults and, if so, the scope of such restrictions; (ii) the role of choice screens and, if mandated, how they should be designed; and (iii) whether to restrict the monetisation of defaults and choice screens. Each of these considerations are assessed in turn below.

¹ Browsers generally allow consumers to change the default search engine (sometimes referred to as the primary default) through the browser settings. Within these settings, consumers may be presented with several alternative options (sometimes referred to as secondary defaults). Unless otherwise stated, we use the term 'default' to refer to the initial or primary default on a browser or device.

Restrictions on default arrangements

11. In the interim report, we highlighted various ways in which restrictions on default arrangements could be implemented. For instance, such restrictions could be targeted at individual search engines, such as Google, or targeted at device manufacturers or web browsers, such as Apple and its Safari web browser. The restriction itself could take various forms, including for example a limit on the proportion of default positions secured by Google, for particular devices or browsers.
12. In addition, such a restriction could apply to any of the contexts in which search defaults occur, including:
 - mobile operating systems (such as Android or iOS);
 - other devices (desktops, laptops, tablets); or
 - web browsers (Safari, Microsoft browsers, or smaller browsers such as Mozilla).

Stakeholders' views

13. Many respondents to our interim report called for a restriction on Google's ability to enter into arrangements to be the default search engine on devices and web browsers.
14. With the exception of Google, all providers of search engines that we engaged with, including Microsoft², DuckDuckGo³ and Ecosia⁴, reaffirmed the importance of search defaults and how prohibiting Google from engaging in arrangements that make it the default search engine on the majority of browsers and operating systems would improve competition between search engines. While search engines that compete with Google called for the more intrusive prohibitions, the calls for intervention also came from a range of other stakeholders, including publishers.
15. Apple expressed strong opposition to an intervention being imposed in respect of Apple products, noting that its current choice of Google as the default search engine on Safari is, at least in part, based on creating a superior 'out of the box' experience for Apple users. [Android OEM] submitted that an intervention could limit its ability and discretion to design and make its

² [Microsoft's response to our consultation on the Interim Report.](#)

³ [DuckDuckGo's response to our consultation on the Interim Report.](#)

⁴ [Ecosia's response to our consultation on the Interim Report.](#)

own products to provide the best possible user experiences. These submissions are consistent with Google's view that an intervention could lead to users being defaulted to a 'less useful or attractive' search engine, which could harm consumer welfare in the short term.⁵

16. Apple also submitted that there is no basis for an intervention involving web browsers or device manufacturers, such as Apple, as it would have the effect of punishing Apple despite the CMA not accusing it of behaving anti-competitively. According to Apple, both the European Commission and ACCC 'extensively evaluated' the competitive significance of Apple's arrangements with search providers and decided against taking regulatory action.
17. Apple also submitted that the intervention, as set out in our interim report, is unlikely to be effective or have a significant positive impact on competition. Apple suggested that given our observation that there are scale advantages in click and query data, any remedy that reduced the quantity of data available to Google would reduce its quality and consequently also harm consumer welfare.
18. In its final report, the ACCC chose not to recommend that all suppliers of operating systems for mobile devices, computers and tablets be required to ensure consumers actively chose their internet browsers and that suppliers of internet browsers make consumers choose their search engines. The reasoning provided by the ACCC for not making this recommendation was that such an intervention could create barriers to expansion for existing smaller suppliers of general search that are vertically integrated with an internet browser and could further entrench the dominance of large incumbents due to their brand recognition.⁶
19. However, DuckDuckGo submitted that a more effective way of addressing this concern would be to limit the applicability of such a remedy to web browsers with very high market shares, such as Apple iOS/iPadOS as well as Chrome. DuckDuckGo suggested that this would also address concerns regarding the sustainability of smaller browsers that generate revenue from defaults arrangements to support their operations.
20. Google expressed concerns regarding the asymmetric application of this remedy and suggested that any intervention should be applied consistently across similarly situated platforms, regardless of which service is set as default and across the main search entry points. In practice, it suggested that

⁵ [Google's response to our consultation on the Interim Report](#).

⁶ [ACCC's Digital Platforms Inquiry Final Report](#), page 30.

such an approach would scope-in Apple's iOS and Microsoft's Windows operating systems.⁷

21. Other market participants submitted that the scope of this intervention should capture a range of operating systems and web browsers. Ecosia expressed the view that applying choice screens on Android and iOS devices would address concerns on mobile devices and that this intervention should also be extended to Google Chrome on desktops.⁸ DuckDuckGo submitted that Google should be forced to relinquish its default position on mobile and tablet operating systems, laptops and most browsers, including Chrome, but, as indicated above, recommended excluding smaller browsers, such as Firefox and Opera, from a ban to support a diverse browser market.⁹

Our views

22. Our analysis of defaults in general search, set out in Appendix H, shows that the impact of defaults varies significantly across devices, in particular between mobile and desktop devices. As such, we have chosen to assess these devices separately.

Mobile devices

23. The mobile operating system market is heavily concentrated with Android and Apple iOS devices jointly making up 99% of the UK smart mobile device market. There is already an antitrust intervention in place on Android devices as a result of the European Commission's Android case. This remedy presents users with a choice of default search engines on their Chrome web browser, where this is pre-installed on an Android device. We have assessed the effectiveness of this remedy, and potential improvements regarding its design, in the subsequent section.
24. With regards to whether an intervention should be extended beyond devices that use the Android operating system to cover other devices and browsers, in practice, this would apply to Apple devices, which account for around half of all smartphones in the UK. Safari is the only web browser pre-installed on these devices and Apple has set Google as the default search engine on Safari in the UK.
25. As set out in Appendix H, our assessment of the impact of defaults and pre-installations shows that defaults have a significant impact on the behaviour of

⁷ [Google's response to our consultation on the Interim Report.](#)

⁸ [Ecosia response to our consultation on the Interim Report.](#)

⁹ [DuckDuckGo response to our consultation on the Interim Report.](#)

users on mobile devices. This finding is also consistent with the views presented by Google and Microsoft in their internal documents. This means that users are less likely to switch to another web browser or search provider on mobile devices.

26. In addition, restrictions on Apple devices prevent non-Safari browsers being launched by default when users click on a link in an email or another app, which further restricts consumers' ability to use alternative browsers. This reinforces the influence of the search default position within the Safari browser.
27. With regards to Apple's submission that there has so far been a lack of action taken by the European Commission regarding Google's arrangements with Apple, we note the European Commission is limited to enforcing rules that prohibit agreements between two or more independent market operators which restrict competition and prohibit firms that hold a dominant position on a given market to abuse that position.¹⁰
28. By contrast, the purpose of this market study is to consider the extent to which arrangements, such as Google's default agreements, have or may have effects adverse to the interests of consumers, and to assess the extent to which steps can and should be taken to remedy, mitigate or prevent any such adverse effects.¹¹ Therefore, simply because an agreement has not so far been expressly deemed to constitute a breach of Article 101 or Article 102 of the Treaty on the Functioning of the European Union following an investigation by the European Commission, does not imply that it is in the interests of consumers.
29. We recognise that the widespread rollout of restrictions could harm smaller suppliers of general search that are vertically integrated with a web browser, as highlighted by the ACCC. For example, this could adversely affect Bing (Microsoft owns the Edge browser and the Bing search engine) and other smaller players that may wish to enter search using a vertically integrated business model in future. We agree with DuckDuckGo that an effective way of addressing this concern would be to limit the applicability of such a remedy to ensure that small web browsers fall outside of the scope of this intervention.
30. We have also considered Apple's observation that, based on the CMA's finding that there are scale advantages to search data, if this remedy led to a reduction in the quantity of data available to Google, it could reduce its quality

¹⁰ European Commission, [Antitrust overview](#).

¹¹ CMA Guidance (2017), [Market Studies and Market Investigations: Supplemental guidance on the CMA's approach](#).

and consequently also harm consumer welfare. We agree that access to relevant search data is an important component of developing relevant search results. However, given Google's very significant market share, unless this remedy led to a dramatic reduction in the volume of queries on their platform, it would be unlikely to materially reduce their access to valuable search data which supports the quality of their search results.

31. Consequently, given the impact of pre-installations and defaults on mobile devices and Apple's significant market share, it is our view that Apple's existing arrangements with Google are having an exclusionary impact and harming competition between search engines on mobiles. As such, we consider there to be a strong case for restricting Google's ability to acquire the default position on Apple mobile devices in the UK.

Desktop devices

32. As shown in Appendix H, Google's default positions in mobile appear to have a stronger impact than Bing's default positions in desktop:
 - Google Search is the initial default on at least 94% of mobile devices and has a 97% share of supply in mobile search.
 - Bing is the initial default on around 68% of desktop PCs and has a 13% share of supply in desktop search.
33. We consider that in part this may reflect Google's status as market leader, with consumers generally perceiving it to offer higher quality results than Bing. However, mobile defaults are also likely to be more powerful than desktop defaults, for example because consumers are less likely to take steps to change or bypass defaults when faced with a smaller screen. Evidence set out in Appendix H further indicates that, holding the identity of the search engine constant, defaults are generally more powerful on mobile devices than on desktop devices.
34. This suggests that the case for restricting the use of default agreements and imposing choice screens is weaker in relation to desktop devices than in relation to mobile devices.
35. However, we have heard concerns that Google is able to engage in 'cross promotions' by leveraging its strong position in general search and related markets to direct its users towards downloading the Chrome web browser. For instance, users clicking on a link within their Gmail account will often be provided with a choice screen offering users to download Chrome, rather than using the user's preinstalled web browser. In addition, Google can issue

prompts to users of the Google search engine on other web browsers to download the Chrome web browser.

36. We have also received several allegations of Google misleading consumers, by claiming security risks, or purposefully degrading the quality of Google search on other browsers, to encourage users to download and use Chrome rather than other providers.

The use and design of choice screens

37. Choice screens are a mechanism aimed at improving consumers' access to alternative search engines. Choice screens provide users with the opportunity to make an active choice regarding their default search engine from a selection of viable alternatives at a key point in time, such as during the device or browser set up.
38. There are already several examples of competition authorities introducing a choice screen to remedy competition problems in the web browser and search engine market. A choice screen was introduced in Russia on Android-operated mobile devices in August 2017 following a settlement agreement between Google and Federal Antimonopoly Service of Russia.¹²
39. In July 2018, the EU Commission found that Google had been illegally requiring manufacturers to pre-install the Google Search app and browser app, Chrome, as a condition of using Google's Play Store.¹³ Google has appealed this decision.¹⁴ Subsequently, to address the European Commission's concerns, Google announced that users would be provided with a choice screen of general search providers on all new Android phones and tablets in the European Economic Area, including the UK, where the Google Search app is pre-installed.¹⁵
40. During the first auction cycle, from 1 March 2020 until 30 June 2020, a choice screen has appeared in the UK during device set up, offering users a choice of Bing, DuckDuckGo and info.com, in addition to Google as the default search engine on the Chrome web browser.¹⁶ Future auction cycles determining which search engines will be made available to users will occur on a quarterly basis.

¹² See [statement](#) from FAS dated 17 April 2017 regarding its settlement with Google.

¹³ COMP/AT.40099 —Google Android; See also the European Commission's [press release](#) dated 18 July 2018.

¹⁴ Case T-604/18, Google and Alphabet v Commission.

¹⁵ Google has published information regarding its choice screen on android devices [here](#).

¹⁶ Android (2020), [Choice Screen winners](#), updated 1 June 2020.

41. In 2009, Microsoft entered into commitments with the European Commission and made a choice screen available on Windows devices between 2010-2014 which gave users the opportunity to choose from a variety of web browsers.¹⁷ This was reported as having been a success, leading to a significant uptake in the downloading of non-Microsoft browsers.¹⁸
42. Certain web browsers already choose to make a choice screen available to users. For instance, we note that Brave, the web browser, has made a choice screen available to its users in the UK as soon as they download their app on mobile devices. Users have been presented with a choice of Google, Bing, DuckDuckGo, Qwant and StartPage to set as their default search engine.

Stakeholders' views

43. In response to the interim report, many stakeholders expressed support for the greater roll out of choice screens, including the Competition Law Forum, which submitted that this measure would improve choice and competition between search engines. Several search engines, such as DuckDuckGo and Ecosia, submitted that specific devices and browsers should be mandated to present users with a choice of search engines.
44. Yandex told us that this remedy, together with the FAS decision to prohibit Google from entering into exclusive default agreements, was effective at providing users with greater choice and improving competition between general search engines. Data provided on Yandex's 'Radar' website show that since the FAS's decision, Yandex's market share on Android-operated devices in Russia has risen steadily and has surpassed Google's market share since January 2019.¹⁹
45. However, a number of stakeholders raised concerns regarding the design and effectiveness of choice screens. Whilst the introduction of Google's choice screen on Android devices was welcomed by several market participants, we have heard concerns regarding Google's design and implementation of this choice screen, in particular regarding the number of choices made available, the use of descriptive text as well as their timing and frequency. These issues are addressed in more detail below.

¹⁷ See the European Commission's [press release](#) dated 16 December 2009 regarding the commitments it entered into with Microsoft.

¹⁸ BBC article (2014), [Deal forcing Microsoft to offer browser choices ends](#).

¹⁹ Market shares obtained from [Yandex Radar](#).

Design of choice screens

46. Google submitted that platform owners and device manufacturers should have sufficient latitude to ensure that any choice screens are designed in such a way that is least likely to interfere with the user experience.
47. However, the design decisions associated with a choice screen can significantly influence users' decisions. In particular, other stakeholders highlighted concerns regarding the number of choices made available. We heard that Google's decision to limit the number of available search engines to four on its Android choice screen created an artificial scarcity that limits the amount of potential competition to Google.
48. Prior to the publication of our interim report, DuckDuckGo conducted some trialling which presented users either a 4-choice or 8-choice variant of Google's Android choice screen. Their results showed that people selected competitors to Google at a rate that could increase their collective mobile market share by 300%-800%, with overall mobile search market share immediately changing by over 10%. This research also showed that an 8-option choice screen was more effective than a 4-option choice screen at increasing rivals' take up.²⁰
49. DuckDuckGo recently conducted additional research into the number of search engines that can fit on typical Android phone screens for devices sold in Europe and whether users scroll to see search engines beyond the first screen.²¹ Their results showed that almost all Android screens can host at least 5 options and that most consumers scroll beyond the first page to view additional options if they are available. Google's placement within the choice screen also affected outcomes, with 80.8% of users selecting Google if it appeared on the first page and 75.8% of users selecting Google if it appeared on the last page.
50. With regards to the descriptive text, we understand that Google has permitted the use of brief descriptive text alongside the search engine name. However, its policies include certain constraints, such as the prohibition of using incentive-based descriptions, such as "earn points each time you search". Given that Google's competitors, such as Bing and Ecosia, use such incentives, this prohibition would appear to constrain their ability to attract users using accurate descriptions of their service.

²⁰ DuckDuckGo research (2020), [Search Preference Menu Immediately Increases Google Competitors' Market Share by 300-800%](#).

²¹ DuckDuckGo research (2020), [Search Preference Menus: Google Auction Ignores Screen Size and Scrolling](#).

51. Market participants also raised concerns that users' decisions would not cover all search functionality on the device. However, Google has submitted that it is already its intention to enable this, as the selection of a search provider from the choice screen will: (i) set the home screen search box to the selected provider; (ii) set the default search provider in Chrome, if installed, to the selected provider; and (iii) install the search app of the selected provider, if not already installed.
52. In addition, the point at which users are presented with a choice screen can also have an impact on the willingness of users to engage with it. In the Spring of 2019, Google presented its existing Android users with two screens, each offering five options for installing services that compete with Google. These options were displayed to users the first time they opened Google Play after an Android update.²² This timing was criticised by market participants who felt that users should be prompted to make this choice during device set up, as is the case for Google's existing Android choice screen, or when users are engaging in search activities rather than unrelated activities, such as opening Google Play.

Effectiveness of choice screens in general search

53. In addition to the design considerations set out above, Google's long-term position in the market could also affect how effective such an intervention could be, especially in the short term. Due to Google's brand recognition, which was described by Microsoft as having 'become a colloquialism synonymous with internet search',²³ we have heard that the significant majority of users would select Google from a choice screen, even if presented with a range of options.
54. This is consistent with the testing performed by DuckDuckGo which, as indicated above, found that 80.8% of users selecting Google if it appeared on the first page of a choice screen and 75.8% of users selecting Google if it appeared on the last page.
55. This contrasts with the impact of the remedy implemented in Russia, which led to Yandex gaining a significant portion of market share from Google. Cliqz attributed this impact to Yandex's position in that market with Yandex already enjoying significant scale and brand recognition in Russia. According to Cliqz, the same mechanism does not work as well in markets where there is not yet established competition.

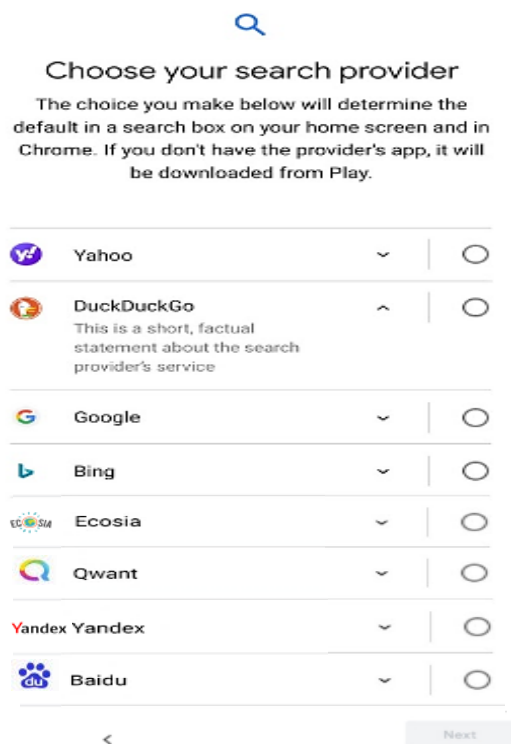
²² Google Blog (2019), [Presenting search app and browser options to Android users in Europe](#).

²³ [Microsoft's response to our consultation on the Interim Report](#).

Our views

56. Choice screens can help improve consumers' access to alternative search engines. As described above, there already several examples of competition authorities introducing choice screens to remedy competition problems in the web browser and search engine market.
57. It is clear to us that design considerations can have a material impact on how users engage with choice screens. As illustrated by the trialling conducted by DuckDuckGo, small changes to their design, such as the number of options made available to users or Google's positioning within a choice screen, can influence outcomes. Other factors, such as the nature of the descriptive text, the coverage of the user's decision and the time at which it is made, are also relevant design considerations.
58. We therefore consider that there is an important role for a regulator to play in scrutinising the design choices associated with any choice screens implemented by platforms owners, OEMs and web browsers. Such involvement is likely to require the trialling of different versions to ensure the choices are sufficiently visible and comprehensible to users.
59. Figure V.1 illustrates how a choice screen could be presented, including eight rather than four slots and with some accompanying text describing the search engine. This image has been adapted from the Android choice screen page, using DuckDuckGo's research and logos found in Google Images.

Figure V.1: possible design of a ‘choice screen’



Source: CMA. This image has been adapted from the Android choice screen page, using DuckDuckGo's research and logos found in Google images.

60. With regards to the effectiveness of a choice screen, this can also be difficult to measure since its purpose is not to shift users away towards a particular search engine but to ensure that users are free to exercise choice in an informed manner.
61. We recognise the concerns raised by other search engines regarding Google's brand recognition and the high market share that Google retained in the trial conducted by DuckDuckGo. Google's reaction to the remedy imposed by the European Commission in its *Android* case also indicates that where restrictions are introduced, Google is likely to pay more to be an option on a choice screen than rivals are willing, or potentially can afford, to pay to be the initial default.
62. In our view, these factors highlight the need for users to be presented with sufficient options and accurate descriptions, as well as the ability to easily switch to another service if users are unsatisfied with their current provider.
63. We also consider that choice screen interventions could become more impactful over time, especially if rival search engines are able to incrementally gain access to more search queries and clicks, which enable them to improve the relevance of their search results. In addition, rivals may be more likely to

invest in additional features that improve the quality of their service, if barriers to accessing consumers are reduced.

The monetisation of defaults and choice screens

64. As explained in Appendix H, competition for default positions on web browsers and devices enables Google, as the largest incumbent, to protect its market position and exclude its rivals from accessing consumers.
65. However, payments for pre-installations and defaults can also generate significant income for web browsers and device manufacturers. These arrangements can benefit consumers as this revenue supports browsers' and device manufacturers' business models and may contribute to lower prices of those products for consumers.
66. Consequently, whilst an intervention that reduces the ability to monetise defaults or choice screens could improve competition between search engines, and lead to associated benefits for consumers, it may involve a trade-off for consumers if browsers or device manufacturers have to recover their costs through other means, such as increasing the price of their products.

Stakeholders' views

67. Apple submitted that an intervention that restricted its ability to monetise default positions would be very costly. Samsung made similar submissions, noting that an intervention could limit its ability to maximise financial benefits.
68. As discussed above, if device manufacturers or providers of browsers are less able to monetise defaults, a potential concern is that they may raise their prices, harming consumers. It was also suggested to us that a consequence of this measure could be that the CMA supports firms with the largest economic power, such as Google, as they would no longer have to incur the same costs to access consumers.
69. Google also told us that platform owners should be permitted to monetise choice screens. According to Google, an auction process can ensure that the search providers most committed to the choice screen solution and with superior revenue-generating efficiency will feature on the choice screen. According to Google, this would mitigate the loss of revenues for platform owners and device manufacturers and avoid any ensuing harm to investment, innovation and knock-on impact on prices for consumers.

70. However, we received a number of submissions from parties that were critical of the way in which browsers monetised their default positions and submitted that this represented a significant barrier to entry. DuckDuckGo and Ecosia submitted that their business models, which are focused on privacy and reforestation respectively, are less monetisable and that this limits their ability to participate successfully win default positions.
71. Market participants were also highly critical of Google's decision to run an auction to determine which search engines would be made available on its choice screen on Android devices. Microsoft described the presence of an auction as inappropriate as it enables Google to use its market power in Android to take search revenues from competitors.
72. The decision to limit the number of options to four is alleged to have pushed up the price to participate and was described as having enhanced Google's ability to extract rent and exclude less profitable search engines, in addition to limiting the amount of potential competition to Google. This also indicates that the design of the choice screen can influence the level of monetisation.
73. Several parties have suggested that the identity of the alternative search engines made available through the choice screen should instead be determined by market share for each particular device or browser, rather than through an auction. This would also be consistent with how Microsoft made its browser choice screen available after it entered into commitments with the European Commission in 2009.²⁴
74. Finally, we received a submission from a search engine that the margins made by device manufacturers are so large that any reduced cost recovery would be unlikely to materially affect device prices. Others recognised that prohibiting monetisation could have a knock-on impact on the price of devices but considered to be a price worth paying to improve competitive outcomes in search and Cliqz noted that this would simply expose the true costs that users are currently indirectly paying through the advertising system.²⁵

Our views

75. Based on the evidence we have examined, we consider that the sale of default positions can restrict smaller search engines' ability to attract users and is entrenching Google's position. We are also concerned that the sale of

²⁴ See the European Commission's [press release](#) dated 16 December 2009 regarding the commitments it entered into with Microsoft.

²⁵ [Cliqz's response to our consultation in the Interim Report](#).

default positions is leading to a number of other outcomes that are harming competition and consumers. For instance:

- (a) Because consumers are less likely to switch away from their default search provider, the selling of defaults appears to represent, at least in part, a monetisation of consumer inertia as web browsers and device manufacturers can extract rents from the search engines. In turn, this can harm search engines' ability or incentive to improve their product offering.
- (b) The economies of scale associated with developing a search engine mean that new entrants will be at a disadvantage when seeking to participate in auctions and successfully acquire default positions, despite offering a service that certain customers view as attractive. In turn, this may harm outcomes for consumers who would rather make use of these search engines.
- (c) Google states that it is charging search engines to appear on its choice screen to 'help us to continue to invest in developing and maintaining the Android platform'.²⁶ Given Google's strong position in general search, we are concerned that funding the Android operating system in this manner is distorting competition.

- 76. We recognise that the sale of default positions can lead to some benefits for consumers. For instance, it is a source of income for some web browsers and device manufacturers and it is possible that default payments would be passed on to consumers to some extent, such as through lower prices for devices, where the recipients are operating in competitive markets.
- 77. However, as discussed in Appendix H, we expect that Google would only agree to make substantial default payments where the benefit to Google from doing so (for example in terms of protecting its profits in search) exceeds the level of the payment. This, combined with the dynamic costs of restricting competition in search, suggests that benefits from search default payments are outweighed by the costs that they impose. We therefore expect that default payments have a negative impact on welfare overall.
- 78. Further, we consider that any adverse effects on device costs or browser sustainability could be mitigated when designing this intervention. As indicated above, due to the impact on user behaviour of defaults on mobile devices, we think there is a particularly strong case for restricting Google's ability to acquire the default position on Apple mobile devices in the UK.

²⁶ Android, [About the choice screen](#).

Limiting the applicability of this intervention to browsers with large market shares would also address the concerns expressed regarding the sustainability of smaller browsers that generate revenue from defaults arrangements to support their operations.

79. Furthermore, the level of monetisation could be influenced by adjusting the number of potential participants in a choice screen or controlled through the terms of any auction. Such an approach would seek to ensure that the intervention occurs in a manner which supports its objectives of offering greater choice to consumers and competition in search while addressing potential negative impacts on device costs.

Illustrative options

80. The three key considerations described above mean that a DMU would be able to implement a variety of options to address the concerns associated with Google's acquisition of default positions. These options can involve different approaches to the scope of any restrictions, the use of choice screens and the ability to monetise these positions.
81. On the basis of our analysis, we think that there is a variety of options that would produce better outcomes than the status quo without entailing major costs (eg a requirement for choice screens on mobile devices with a design driven by the DMU). While more far-reaching reforms – such as full prohibitions on Google's ability to purchase defaults and significant restrictions on monetisation – are likely to involve greater costs, they are also likely to have a more transformational effect on competition in search. The DMU would have discretion to design interventions in such a way as to maximise the net benefits for consumers.

Conclusion – demand-side remedies

82. We have viewed a range of evidence which suggests that Google's acquisition of default positions across a wide range of web browsers and devices is having a negative impact on social welfare overall. As explained in Appendix H, the amounts paid by Google to be the default search engine on web browsers and devices are, in effect, excluding rivals from being the default search engines across very significant portions of the market. In turn, reduced competition in search can lead to increased prices for goods and services across the economy that use search advertising, as well as weaker dynamic competition and innovation on the user side.
83. We have therefore considered the extent to which an intervention could be designed in a manner that maximises the potential benefits for consumers of

opening up the general search market whilst minimising any associated costs. In conducting this assessment, we have considered the scope of any intervention, including the extent to which it should be targeted at specific devices or web browsers, the role of choice screens as a pro-competitive tool, and how to mitigate any adverse effects that could result from restricting the monetisation of default positions.

84. Given the impact of pre-installations and defaults on mobile devices and Apple's significant market share, it is our view that Apple's existing arrangements with Google are having an exclusionary impact and harming competition between search engines on mobiles. As such, we consider there to be a strong case for restricting Google's ability to acquire the default position on Apple mobile devices in the UK.
85. Choice screens can also play an important role in promoting competition and facilitating consumer choice. They would be a reasonable first step for a DMU to introduce more widely, particular on Apple mobile devices. Given that design considerations can have a material impact on how users engage with choice screens, there is an important role for a regulator to play in scrutinising these decisions.
86. The issue of monetisation of default positions exposes some difficult trade-offs, particularly if default payments are passed on to consumers to some extent, such as through lower prices for devices. However, our assessment is that default payments have a negative impact on social welfare overall and that restricting them will therefore increase social welfare. Further, mechanisms could be introduced that influence the level of monetisation, while falling short of absolute restrictions, for instance by limiting the coverage of any intervention or by adjusting the number of participants in a choice screen. Such an approach would seek to ensure that the intervention occurs in a manner which supports its objectives of offering greater choice to consumers and addresses the overall negative impact of default payments on social welfare. **We therefore recommend that the DMU should have the power to restrict defaults and monetisation and introduce choice screens.**

Supply-side remedies

87. As set out in Chapter 3, two key supply-side barriers that rival search engines face to develop a search engine that produces independent search results are:
 - significant economies of scale in web-crawling and indexing; and

- scale advantages, with respect to the number of search queries and the information gained from users' interaction with search.
88. As set out in Chapter 7, the Furman Review recommended that its proposed Digital Market Unit should use data openness, ie the provision of third-party access to data, as a tool to promote competition, where it determines this is necessary and proportionate to achieve its aims.
89. In the interim report, we put forward potential data access remedies and sought views regarding how effective these would be at increasing the ability for rival search engines to improve the quality of their output and compete more effectively in this market. In the following section, we have set out our assessment of whether the provision of search data would be effective at improving competitive outcomes, as well as whether providers of search results and adverts, under syndication agreements, should be subject to an obligation to supply this service on fair, reasonable and non-discriminatory terms.

Search data

90. As explained in Chapter 3, we have found that there are advantages to scale in search data and that the greater scale of English-language queries seen by Google supports its ability to deliver more relevant search results compared to its competitors. An illustration of this is the decision by Microsoft to enter into syndication agreements. While, in some cases, this can lead to direct benefits for Microsoft through revenue generation, these agreements also help Bing build greater scale in search data, which may in turn help improve its search relevance and search advertising monetisation.
91. The Furman review concluded that there may be situations where providing access to some of the data held by digital businesses on reasonable terms could be an essential and justified step needed to unlock competition. However, this review also recognised that any remedy of this kind would need to protect personal privacy and consider carefully whether the benefits justified the impact on the business holding the data.²⁷
92. In the interim report, we highlighted that a remedy could be designed to require Google to provide access to a number of data points, potentially some or all of:
- user queries;

²⁷ Furman Review, [Unlocking digital competition](#), paragraphs 2.79-2.92.

- users' interactions, such as user clicks, click backs and other relevant data, such as location data or previous search; and
 - search results.
93. We have considered whether the provision of access to these different data points would improve competitive outcomes. Where we consider that access to this data has the potential to improve outcomes, we have considered their privacy implications as well as the impact on incentives to innovate.

User queries

94. The provision of access to users' queries on Google Search would provide other search engines with insights into the types of information that users are looking for online. As illustrated by comparing the range of queries on Google and Bing, Google sees each uncommon query more times than Bing in a given time period, which we consider supports Google's ability to serve more relevant results to uncommon queries compared to Bing.
95. Google suggested sharing Google Trends data in a form that enables other search parties to obtain large-scale access to that data, such as through a bespoke API, could have the potential to promote competition. According to Google, sharing Google Trends data would not raise the privacy and incentives concerns discussed below since it would only include sufficiently aggregated query data and could exclude data that raises privacy concerns or enables others to expropriate Google's innovations.
96. However, other stakeholders suggested that without associated insights into users' behaviours on the search engines, such as which websites they choose to visit after making such a query, the provision of access to user queries may limit the ability of search engines to train their algorithm and improve the relevance of their search results.

Users' interaction data

97. As indicated above, complementing query data with associated information regarding users' subsequent interactions online could enable other search engines to draw valuable insights. In particular, such data could enable search engines to identify potential improvements to their product, such as changes to ranking and spelling correction algorithms.

Stakeholders' views

98. Several competitors of Google, such as Ecosia,²⁸ DuckDuckGo,²⁹ Cliqz,³⁰ and Lilo³¹ expressed support for a remedy that provided access to Google's user click and query data. Verizon Media also submitted that the provision of this data could be effective at improving competitors' services and could incentivise investment by competitors in innovation and analysis.³²
99. Microsoft submitted that providing search engines with access to a stream of keyword and associated click data would be easy to develop as the data is easily identifiable and could be provided through data feeds that are common in the industry and would not, in their view, be prohibitively expensive. Such data could be provided a few times a day, for instance, every 6 to 12 hours.
100. This intervention was described as being easily implementable without major cost by Cliqz.³³ However, an advertiser expressed the view that query data would need to be paid for as the CMA had identified substantial costs associated with maintaining the necessary infrastructure. Furthermore, two main concerns were raised with regards to this intervention: privacy and incentives to innovate.
- *Privacy*
101. The disclosure of users' click and query data has the potential to expose users to privacy breaches. Privacy International expressed strong concerns regarding the provision of open access to query data.³⁴ These concerns were echoed by Google, who highlighted that many search queries contain personal data.³⁵
102. Google submitted that it invests heavily in security, auditing and protection capabilities to ensure that its user data is held safely. Since it cannot guarantee the security requirements of third parties that might receive the data, Google suggested that its users would be vulnerable to the disclosure of sensitive and private information which would undermine users' trust in Google.

²⁸ [Ecosia response to our consultation on the Interim Report.](#)

²⁹ [DuckDuckGo response to our consultation on the Interim Report.](#)

³⁰ [Cliqz's response to our consultation in the Interim Report.](#)

³¹ [Lilo response to our consultation in the Interim Report](#)

³² [Verizon's response to our consultation on the Interim Report.](#)

³³ [Cliqz's response to our consultation in the Interim Report.](#)

³⁴ [Privacy International's response to our consultation on the Interim Report.](#)

³⁵ [Google's response to our consultation on the Interim Report.](#)

103. Google also suggested that identifying and anonymising this information in large-scale datasets would be a major challenge with no guarantee of success. Google submitted that unique and rare queries do not lend themselves to sufficient aggregation to protect users' privacy and are vulnerable to reverse engineering of users' identity, which is why Google does not disclose queries that are insufficiently frequent to protect against privacy exposure. This is consistent with Privacy International's submission that there was a "fine line between pseudo-anonymised data and anonymised data".³⁶
104. Several search engines, such as Verizon Media and Cliqz, recognised these privacy concerns and advised that any implementation of this remedy would require great care. We were also informed of an incident in 2006, in which AOL released 20 million web queries from 650,000 AOL users. Whilst the published data did not explicitly identify the users, and replaced their username with random ID numbers, the ability to analyse query data by a single identifier enabled the identity of certain users to be reverse engineered.³⁷
105. Consequently, this intervention would give rise to privacy concerns if it contained personal identifiers or if the relevant information could enable the reverse engineering of users' identity. However, we understand from our engagement with the ICO that it may be possible to provide access to a more limited range of search data that would not constitute personal data.
106. Ecosia submitted that privacy concerns could be mitigated if the disclosed data was limited to query, URL click and click back data and that location data could be provided on a rough basis, such as part of a post code. DuckDuckGo submitted that to be effective as a remedy, the relevant data need not and should not have consumers' personal information and any identifiable data, such as home addresses or telephone numbers, could be filtered out.
107. DuckDuckGo also submitted that APIs already exist to provide search results and that since the data is presented in a non-user identifiable manner, privacy and consumer protections, including compliance with GDPR, are preserved. This is consistent with Cliqz's submission that it is technically possible to collect click data in a manner that guarantees users' privacy. Indeed, Cliqz has developed a concept called 'Human Web'³⁸ which is a methodology and

³⁶ [Privacy International's response to our consultation on the Interim Report](#).

³⁷ [TechCrunch article \(2006\), AOL proudly releases massive amounts of user search data](#).

³⁸ [Cliqz blog \(2019\), Human Web – Collecting data in a socially responsible manner](#).

system designed to collect data, while guaranteeing that signals cannot be turned into ‘sessions’³⁹ once they reach the recipient.

- *Incentives to innovate*

108. Google also expressed strong concerns that such an intervention could enable rivals to reverse engineer Google’s search results since rivals could deduce the likely rank from the volumes of clicks that a link received. As a result, Google submitted that such an access remedy could lead to rivals imitating Google’s results.
109. Furthermore, Google suggested that rivals could draw insights on the operation of Google’s algorithms from observing how results change as a function of clicks and other factors if Google were required to share click and query data. Google submitted that, in this case, since any improvements to its search results could be virtually instantaneously copied by its rivals (assuming instantaneous sharing of click and query data feeds were technically possible), such an intervention harmed all parties’ incentives to invest in indexing technologies and ranking algorithms. Google also submitted that such concerns are not merely hypothetical as it suggested that Microsoft had already engaged in this form of behaviour.⁴⁰
110. Mojeek echoed the concern that such an intervention would dampen the incentive for other search engines to invest in their own indices and algorithms and would lead to other search engines mimicking Google’s service.⁴¹ The Developers’ Alliance also expressed concerns that such an intervention would compromise data-driven innovation.⁴²
111. However, DuckDuckGo did not agree that the provision of click and query data would reduce Google’s incentive to innovate and improve its algorithm. DuckDuckGo suggested that intervention would heighten, rather than dampen, incentives to innovate as it would improve the competitive landscape. The Competition Law Forum agreed that this intervention would actually heighten incentives to invest and suggested that without this form of intervention, Google’s position in the market would become further entrenched.

³⁹ Sessions provide a record of a consumer’s searches linked together over time or by device through a single identifier.

⁴⁰ Google blog (2011), [Microsoft’s Bing uses Google search results – and denies it.](#)

⁴¹ [Mojeek’s response to our consultation on the Interim Report.](#)

⁴² [Developers’ Alliance response to our consultation on the Interim Report.](#)

Our views

112. The first relevant search data point that could form part of an access remedy would involve the provision of queries that users input into a search engine. An intervention requiring third party access to search data could provide rival search engines with helpful insights into the information that users are looking for online, including many of the uncommon or ‘tail’ queries that only Google has access to.
113. Google’s statement that data from Google Trends could be provided to other search engines through a bespoke API is an interesting proposition and suggests that the technology required to design this intervention is available. However, the nature of the data made available through Google Trends, which would exclude the most uncommon queries, would be unlikely to address Google’s scale advantages in data.
114. Furthermore, we have found that access to users’ interactions on a search engine is an important input into the provision of relevant search results. This positive feedback loop helps search engines assess and improve the performance of their product. Therefore, without associated insights into users’ behaviours on the search engines, the provision of access to user queries may not provide the necessary information for search engines to train their algorithm and improve the relevance of their search results.
115. Consequently, we have considered whether the provision of additional search data would enable search engines to identify and test potential improvements to their products, such as changes to ranking and spelling correction algorithms, and improve their ability to compete and attract users. In practice, given Google’s market share, such an intervention would require the provision of search data on Google’s search engine to its rivals.
116. As highlighted in Appendix T, it is important to give appropriate consideration to (i) privacy and (ii) efficiencies when assessing the impact of increasing competition through data remedies.
 - *Privacy*
117. As discussed above, concerns from a privacy perspective arise if the disclosure of search data could lead to the identification of users. This risk arises if the disclosed data includes personal identifiers, including trackers or IP addresses, which could be traced back to an individual or enables the reverse-identification of users. We understand that this risk is heightened when information is disclosed as ‘sessions’.

118. However, with the exception of changes made to reflect users' location, search results are generally not personalised. As such, it is unclear that there would be any competition benefits associated with the provision of access to user identifiers, whether anonymised or not, that are associated with the search data. Therefore, we do not consider that any access remedy should include data that links search queries over time, including search history data.
119. With regards to location data, it should be possible to provide this information on a sufficiently generalised basis, such as regions or neighbourhoods, to avoid the potential disclosure of personal data. A remedy could therefore be designed which provided access to users' query, click, any click back data and their location data, without requiring the disclosure of personal data.
120. Consequently, although regulators have the power to make orders which may require the processing of personal data, such as the CMA under the Enterprise Act 2002 to remedy adverse effects on competition,⁴³ we do not consider that such a step would be required in this case even if it were desirable. We therefore consider that this remedy could be designed in a way that would make search data available in a format that protects user privacy and avoids the disclosure of personal data, whilst providing access to the data which has the potential to maximise competition and benefits for consumers.

- *Efficiencies*

121. With regards to the impact of this intervention on competition, it is necessary to consider this within the context of its impact on static and dynamic efficiencies.
122. Given that we have found search data to be a valuable input into the provision of high-quality search results, and that competitors to Google currently face barriers to access this data, there would be clear static benefits associated with this intervention. This is reinforced by the fact that it should be possible to design the remedy in a low-cost manner, given that APIs already exist to provide search results and a bespoke API could be developed with provides large-scale access to the relevant search data.⁴⁴
123. However, certain stakeholders challenged the likely effectiveness of this intervention, with Google claiming that it would dampen its incentive to innovate, as well as that of its rivals, and would therefore have a detrimental impact on dynamic efficiencies.

⁴³ [ICO, Guide to Data Protection, Lawful basis for processing.](#)

⁴⁴ Although we would expect Google to be able to recover the implementation costs associated with making this data available from the recipients on a cost recovery basis.

124. We recognise that if such an intervention included a requirement to disclose the outputs of proprietary search algorithms, which is the result of investments in search and associated infrastructure, this could enable free riding which may dampen Google's incentives to innovate and invest.
125. However, we are concerned that without access to such data, Google will continue to be able to iterate and improve faster than other search engines who will remain limited in their ability to improve the quality of their service, attract users and improve competition in this market. Furthermore, given that there are significant economies of scale in web-crawling and indexing, access to this data, alongside demand-side remedies, could be the necessary step to incentivise smaller search engines to invest in their own web-index, reducing their reliance on syndication agreements.
126. Such an intervention would exclude other features of the search engine which are used to attract users, such as quick answers, maps and images. This which would preserve the incentive to innovate and attract users through a differentiated service.
127. We would want to avoid a scenario in which other market participants simply use this data to reverse engineer Google's search results and present these to users. We therefore consider that the DMU should undertake further work to consider how this intervention could be designed in a manner that enhances incentives to innovate.

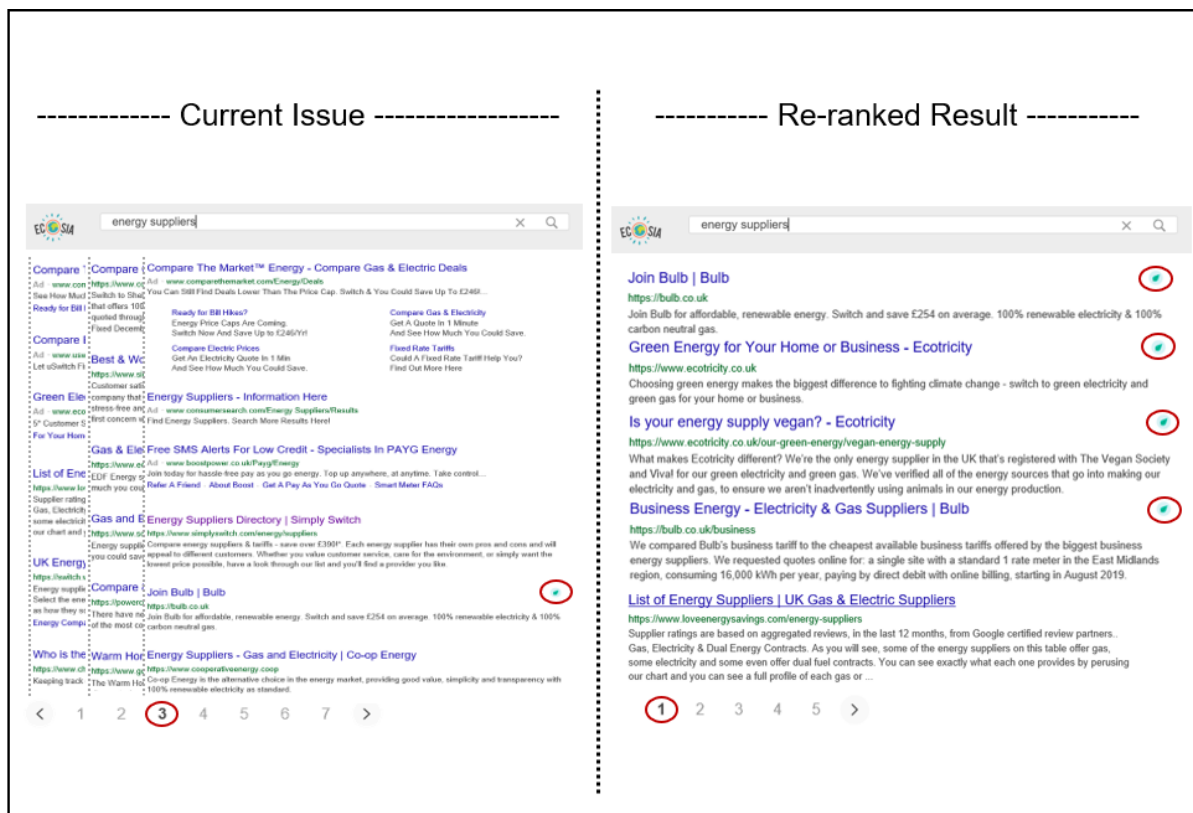
Search results

128. As explained in Chapter 3, the provision of organic search results, as an end product, already exists in this market through syndication agreements. Indeed, the most significant rival search engines to Google and Bing in the UK, such as Yahoo!, DuckDuckGo and Ecosia, use Bing's organic search results. Whilst most of the larger syndicator search engines in the UK use Bing's organic search results, we understand that Google's search results are also used by some search engines, such as StartPage.
129. However, as explained in Chapter 3, the provisions included in these agreements can restrict the ability of recipients to innovate and improve the services they offer consumers, therefore harming competition amongst search engines. For instance, clauses within some of these agreements impose constraints on the recipient's ability to change the ranking of search results or the use of third-party advertisements. These agreements can also require approval to be set as the default search engine on other devices or browsers. For instance, companies that have a syndication agreement with Google are not currently eligible to participate in Google's Android choice screen

remedy.⁴⁵ We have assessed in Appendix U how the code could be used to investigate such concerns.

130. While recognising the need for the providers of organic search results to earn a fair rate of return and preserve their incentive to innovate and improve their output, we sought views in the interim report regarding whether syndication agreements should be offered by certain providers, and should be subject to fair, reasonable and non-discriminatory (FRAND) terms.
131. Such terms may limit clauses that restrict recipients' ability to compete in these markets, enabling Ecosia, for instance, to re-rank its search results to prioritise eco-friendly websites, as illustrated in Figure V.2 below. More generally, one might expect improved terms for recipients to result in benefits for consumers and/or advertisers.

Figure V.2: Search click and query re-ranking remedy



Source: Current results (LHS) were taken from screenshots of the current ranking for 'energy supplies' search in Ecosia, with the first 'greener, more sustainable choice' indicated by the leaf is near the bottom of page 3. Re-ranked results (RHS) image is adapted from Ecosia's search result for 'energy suppliers' such that every leaf result has been re-ranked to appear on the top of page 1. Currently these results can be found on page 3, page 10, page 14, page 21.

⁴⁵ Android, [About the choice screen](#).

Stakeholders' views

132. Firms that are reliant on these results, such as Ecosia, DuckDuckGo and Lilo, expressed strong support for this intervention. In their view, this would support the development of search engines that offer compelling alternatives to the largest two suppliers which would improve outcomes for consumers, although they recognised a need to monitor the competitive dynamics between Google and Microsoft. Arete Research also expressed support for this initiative.⁴⁶
133. However, a number of objections were also raised with regards to the implementation of this remedy. The Competition Law Forum expressed concerns regarding the feasibility of this remedy and whether the FRAND terms could realistically be developed, agreed and monitored. Verizon Media also expressed concerns that such an intervention would constrain the ability or willingness of competing search providers to explore new business models.
134. Mojeek expressed similar concerns to its views on the click and query data remedy, that it would dampen incentives for search engines to develop their own indices and algorithms and provide genuine alternatives to Google and Bing.
135. Finally, Google characterised this intervention as an extreme form of regulatory intervention which effectively amounts to a requirement to license its intellectual property rights or proprietary technology on FRAND terms, which only arises in “exceptional circumstances” such as standard setting. Google submitted that these are not exceptional circumstances and that search services and ads are not standardised and the underlying intellectual property is not essential.

Our views

136. We are conscious that syndication agreements have been the primary route to market for most smaller search engines in the UK. In addition, we note that both Google and Microsoft are already active in this market and that an intervention in this market has the potential to deliver significant benefits for consumers, as illustrated by Figure V.2 above. We also recognise that there are currently only two search engines with large scale web indexes providing English-language search results and given the significant economies of scale in web-crawling and indexing, the scope for further entry may be constrained.
137. However, with regards to whether DMU should require search engines to enter into syndication agreements with third parties on FRAND terms, we

⁴⁶ [Arete Research's response to our consultation on the Interim Report.](#)

recognise that obligations to license intellectual property can give rise to material risks for dynamic incentives. We therefore think that it is likely to be preferable for the DMU to explore other pro-competitive measures, aiming at fomenting upstream competition, before resorting to this intervention.

138. If DMU were to consider imposing such an intervention, the level of intrusiveness associated with it will depend on how FRAND is defined and whether it is focused on non-price terms. Careful design could ensure that suppliers of search results are provided with appropriate returns on their investments, and ensure that the recipient of the results still have the incentive to 'build' rather than 'buy' their own search results.

Conclusion – supply-side remedies

139. As set out in Chapter 3, we have found that Google's scale advantages, with respect to the number and type of search queries and the information gained from users' interaction with search, represent a key supply-side barrier to entry and expansion for rival search engines. This effect is more material for particular types of query, such as uncommon or 'tail' queries. Given the importance of search relevance to consumers, the lack of comparable scale in search data limits the ability of other search engines to compete with Google.
140. We have therefore considered the extent to which an intervention could be designed in a manner that provides other search engines with access to relevant search data points which would maximise the competitive benefits, by supporting their ability to develop her quality search results and attract more users, whilst mitigating any adverse effects resulting from this intervention.
141. The disclosure of Google's query data would provide helpful insights into the type of information that users are searching for online. However, without associated information regarding users' interactions with the search engine, the ability of rival search engines to train their algorithms and generate higher quality search results may continue to be constrained. We therefore considered how effective a remedy would be that included additional search data and whether it could be designed in a manner that mitigates any potential adverse effects.
142. Stakeholders raised a concern that this intervention would risk disclosing personal data. However, we consider that if the scope of the data disclosed were limited to users' queries, clicks, any click back data and their general location without being associated with user identifiers, it should not give rise to privacy concerns.

143. Other stakeholders also challenged the effectiveness of this intervention. Google suggested that it would lead to free riding on its investments with rivals seeking to mimic its search results and in turn, dampening all parties' incentives to innovate.
144. However, we are concerned that without access to such data, Google will continue to be able to iterate and improve faster than other search engines who will remain limited in their ability to improve the quality of their service, attract users and improve competition in this market. Furthermore, given that there are significant economies of scale in web-crawling and indexing, access to this data, alongside demand-side remedies, could be the necessary step to incentivise smaller search engines to invest in their own web-index, reducing their reliance on syndication agreements. We consider that the DMU should undertake further work to consider how this intervention could be designed in a manner that enhances incentives to innovate.
145. **We recommend that the DMU be given the powers to mandate third party access to search data.**
146. Finally, we also considered whether Google should be obliged to supply its search results through syndication agreements on FRAND terms, which received a lot of support from market participants who are reliant on Google and Microsoft search results to be active in this market. We recognise that obligations to license intellectual property give rise to risks for dynamic incentives and that it is likely to be preferable to explore other pro-competitive measures before resorting to this intervention.

Overall conclusion

147. As described in Chapter 3, existing rivals to Google and prospective entrants face a series of self-reinforcing barriers to expansion, limiting the competitive threat faced by Google. Google's scale helps it to further improve the quality of its results and to pay for extensive default positions.
148. We have assessed the benefits and costs of potential interventions that could help rival search engines overcome the demand-side and supply-side barriers to entry and expansion identified in this market and improve competition and outcomes for consumers.
149. Given the impact of defaults on user behaviours and Google's approach to acquiring the default position across such a significant portion of the market, we consider that a DMU should prioritise implementing a restriction on Google's ability to acquire these positions. Without such an intervention, we are concerned that competition between general search providers, and

ensuing benefits for consumers, will remain limited, particularly on mobile devices.

150. A choice screen could be an effective tool at improving rival search engines' access to users and for users to exercise choice regarding which search engine they choose to use. However, we recognise that there are limitations associated with choice screens and design considerations can have a material impact on their effectiveness. As such, we consider that the DMU should play a key role in designing any choice screens and that if this intervention were ineffective, more stringent prohibitions should be considered.
151. With regards to monetisation, we also consider that measures could be employed that mitigate the concerns identified, such as limiting the coverage of any intervention or by adjusting the number of potential participants in a choice screen.
152. As indicated above, successful demand-side remedies could lead to increased usage of other search engines which will provide them with access to greater volumes of valuable search data. In turn, this may enable rivals to train their algorithms to produce more relevant search results. As such, there is, in principle, a level of substitutability between demand-side and supply-side remedies.
153. However, we are conscious of the scepticism expressed by market participants regarding the substitutability of these interventions and their suggestion that we are currently in a catch 22 situation, whereby demand-side remedies would not be sufficiently effective until search engines have access to the level of search data needed to improve their results.
154. Furthermore, given that there are significant economies of scale in web-crawling and indexing, access to this data, alongside demand-side remedies, could be a necessary step to incentivise smaller search engines to invest in their own web-index, reducing their reliance on syndication agreements.
155. We also note that there is the scope for a stepped approach to the introduction of remedies. For instance, choice screens could be introduced across a targeted segment of web browsers, and a DMU could choose to accompany this with a supply side intervention. In particular, a remedy that provided access to Google's click and query data may be necessary to generate competition on the supply side of the market, given that there are currently only two large scale English language search engines that generate their own search results.

156. With regards to imposing obligations to supply syndication agreements on FRAND terms, we recognise the concerns raised by Google and consider that, for now, the focus should remain on promoting upstream competition. As such, we do not consider that this should be an immediate priority for a DMU to introduce although it should form part of a DMU's regulatory toolkit.
157. **Consequently, we consider that a DMU should have the powers to impose both demand-side and supply-side interventions, including powers to restrict default arrangements, introduce choice screens and require access to search data.**