Appendix L: assessment of Strategic Market Status

Introduction

1. In July 2021, the government consulted on its proposals to introduce a new pro-competition regime for digital markets in the UK.[1] It stated that this regime would proactively shape the behaviour of digital firms with significant and far-reaching market power, by making clear how they are expected to behave. The government expects the regime to boost competition and innovation by tackling the sources of existing and future strategic market power, described as Strategic Market Status (SMS), while protecting smaller businesses, consumers and competition by governing the relationship between users and key digital firms. The regime will be implemented and enforced by a dedicated Digital Markets Unit (DMU), which was established on a non-statutory basis within the CMA in April 2021.

2. The government published its response to the consultation in May 2022.[2] It outlined that the vast majority of respondents supported the proposals for the regime and that the government will bring forward legislation to implement the reforms when parliamentary time allows.[3]

3. As we set out at the start of our market study, we intend the conclusions that we reach to contribute to the process of establishing and operationalising this new pro-competition regime. In particular, we expect the findings of this market study to be a useful input into any DMU assessment of whether Apple and Google are likely to be designable with SMS in particular activities, and also regarding the appropriate range and design of potential interventions that the DMU could put in place following the introduction of the regime, were it to find either Apple or Google to have SMS. Carrying out this work now should help ensure that, when legislation is passed to empower the DMU to perform its functions under the proposed new regime, it has a strong evidential foundation on which to build its own analysis and assessment of these issues, and to reach a view and – if and where it considers it necessary – introduce any interventions it proposes promptly.

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[1] A new pro-competition regime for digital markets (publishing.service.gov.uk).
[2] Government response to the consultation on a new pro-competition regime for digital markets.
[3] Government response to the consultation on a new pro-competition regime for digital markets (publishing.service.gov.uk), page 9. The government's intention was confirmed in the Queen's Speech on 10 May 2022 when it stated that 'Measures will also be published to create new competition rules for digital markets and the largest digital firms [Draft Digital Markets, Competition and Consumer Bill]'. See Queen's Speech 2022 - GOV.UK.

4. With this aim, in this appendix we draw from our findings in Chapters 3 to 6 to assess whether, based on the evidence we have gathered to date, Apple and Google would presently meet the proposed test for being brought within the new regime (based on the currently proposed test for SMS designation as set out in the government's consultation response).

Strategic market status

5. Building on the recommendations of the Furman Review[4] and subsequently the CMA's advice through the Digital Markets Taskforce, the government has proposed that firms would be brought within the scope of the regime where they are designated by the DMU as having SMS. For a firm to be designated with SMS, the DMU would need to conclude that the firm has substantial and entrenched market power in at least one activity, providing it with a strategic position.[5] This was confirmed in the government's response to the consultation where it stated that '[t]he regime will be targeted at a small number of firms with substantial and entrenched market power, which gives them a strategic position ('Strategic Market Status') in one or more activities.'[6]

6. In the government's consultation the proposed test for SMS contained the following three components:

- **Digital activities**: the government has proposed that the DMU should be able to group certain products, services and processes into a single activity if they all can be described as having a similar function or, if in combination, can be described as fulfilling a specific function. It has proposed that such activities are considered 'digital' where digital technologies are a 'core component' of the products and services provided as part of that activity.

- **Substantial and entrenched market power**: substantial market power arises when users of a firm's product or service lack good alternatives to that product or service, and there is a limited threat of entry or expansion by other suppliers. Such power is entrenched where it is expected to persist over time and is unlikely to be competed away in the short or medium-term.

- **Strategic position**: a strategic position would exist where the effects of a firm's market power are likely to be particularly widespread or significant.

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[4] Unlocking digital competition, Report of the Digital Competition Expert Panel (March 2019).
[5] See A new pro-competition regime for digital markets, Part 3.
[6] Government response to the consultation on a new pro-competition regime for digital markets, page 7.

The government's proposed criteria for the DMU to consider when assessing the extent of a strategic position are:

- **whether the firm has achieved very significant size or scale in an activity**, for example, where a product is regularly used by a very high proportion of the population or where the value of transactions facilitated by a product is large;
- **whether the firm is an important access point to consumers** (or, in other words, a gateway) for a diverse range of other businesses or the activity is **an important input** for a diverse range of other businesses;
- **whether the firm can use the activity to determine the 'rules of the game'** for those users of the firm's own ecosystem and also set practice for those businesses in the wider market; and
- **whether the firm can use the activity to further entrench or protect its market power** in that activity, **or to extend its market power** into a range of other activities.

7. The government proposals also suggest that an assessment of whether a firm has substantial and entrenched market power should closely follow the approach that the CMA takes in market studies and investigations such as this study.

8. In its response to the consultation the government outlined in relation to SMS:[7]

- That the regime will be targeted at certain types of 'digital activities' but that the government is considering alternative ways of defining this in legislation.
- It will require the DMU to establish a UK nexus, ensuring a focus on competition in the UK.
- The government intends to adopt a minimum revenue threshold in legislation and will consider what an appropriate threshold would be.
- The government will introduce a requirement for the DMU to publish guidance on the concepts of 'activities' and 'strategic position' and how they will be applied in practice. In addition, the list of criteria used to assess whether a firm has a strategic position will be exhaustive and set

[7] Government response to the consultation on a new pro-competition regime for digital markets, page 16 and 17.

out in legislation with the government exploring options for how the criteria can be periodically updated in response to fast-moving digital markets.

- The DMU will have discretion to decide how to prioritise which cases to take forward and will be required to publish guidance on the way it will prioritise its assessment to provide clarity to stakeholders.

- There will be a statutory deadline of 9 months for the DMU to complete Strategic Market Status designation assessment which will be extendable by 3 months in exceptional circumstances.

9. The following sections set out our assessment based on the evidence we have seen to date of whether each of Apple and Google would presently meet the criteria set out in the government's consultation (and its subsequent response to the consultation) for activities assessed within the scope of this market study. We recognise that this assessment is based on a proposed test, for which the full details are yet to be determined. For example, the government is still considering some elements of the test (eg how to define 'digital activities' in legislation) and the test may also change due to any subsequent legislative developments. The reasoning in this appendix is based upon our current understanding of the legislation that the government intends to introduce. It will ultimately be for the DMU to make any assessments of SMS for itself, based on the legislation as implemented, and in response to the market conditions and any further evidence it gathers at that time.

Apple

10. In Chapters 3, 4 and 5 we considered three different elements of Apple's mobile ecosystem separately, namely: (i) mobile devices and operating systems; (ii) native app distribution; and (iii) browsers and browser engines. We recognise that there are strong interdependencies between these products and services within Apple's mobile ecosystem and that there is a question about whether any SMS designation relating to these elements would be separate or combined in some way.[8]

11. For the purposes of this report we have not considered this question, which is ultimately for the DMU to address (including by publishing guidance) and which will furthermore depend on the content of any final legislation which formally establishes the DMU and its powers.

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[8] Chapter 6 considers the role of Apple and Google in competition between app developers, and the potentially damaging effects their conduct may have on competition. We have considered this analysis as part of the assessment of whether Apple's or Google's positions in relation to the separate elements of their mobile ecosystems are strategic.

12. Rather, for the purpose of our assessment here we have taken the same approach as in previous chapters by considering whether Apple may have SMS in an identified digital activity in relation to each element of its mobile ecosystem separately. In doing this, we have followed the approach presently envisaged in the government's consultation and response (although as noted above the government is continuing to develop some elements, including the definition of 'digital activity'), applying it to our findings from Chapters 3, 4 and 5.

Mobile devices and mobile operating systems

Relevant 'digital activity'

13. Apple's iOS is only available on Apple's own mobile devices – iPhone and iPad. iOS is not supplied or licensed to any third party and Apple explained that the 'interrelationship' between mobile devices and mobile operating systems is at the 'core of Apple's business model'.

14. Therefore, on the basis that they are inextricably linked, our view based on the evidence we have seen to date, is that any specific activity carried out by Apple which relates to the supply of mobile operating systems also includes the devices on which they are installed. Such an activity would focus on the relevant products and services supplied to users rather than other aspects of the supply of mobile operating systems and the devices on which they are installed, such as the supply of hardware components.

15. In our view this activity is 'digital' because mobile devices are essentially small computers that can be used to access the internet, whether via wireless networks or mobile phone networks and which process information in discrete form. In this regard, mobile devices rely on digital rather than analogue communication systems. Mobile operating systems are a layer of computer software that allow other software (eg native apps, web apps) to operate on a mobile device including allowing other software to make use of the mobile device hardware. Without the mobile operating system, users would not be able to access any digital content on their devices. The core hardware and software components contained within a mobile device, including the operating system, are widely recognised and understood to be digital technology.

16. Even if mobile devices do not fall within the scope of any relevant 'digital activity' in the final legislation, we consider that there would be an activity carried out by Apple which relates to the supply of mobile operating systems and so our analysis set out below would still hold.

17. Our view based on the evidence we have seen to date is that this activity (mobile operating systems and mobile devices) would include not only smartphones, but also tablets (ie Apple's iPad and iPadOS) as:

- in tablets, as in smartphones, Apple has consistently had a share of active devices of [50-60]% in the UK as set out in Chapter 3;
- the concerns we have heard in relation to the key gateways in Apple's mobile ecosystem, the App Store and the WebKit browser engine, relate to both smartphones and tablets; and
- apart from some differences in shares of supply (eg the presence of a material third operating system – Amazon's Fire OS had a [20-30]% share of active tablets in 2021), ownership rates (lower for tablets)[9] and use cases, no parties have suggested that tablets should be treated differently to smartphones.

Substantial and entrenched market power

18. We consider that the evidence identified in this study supports the case that Apple has substantial and entrenched market power in the supply of mobile operating systems. Given Apple's business model, this conclusion relates to its devices and operating system in combination. This is based on its shares of supply (including changes over time), evidence on current competition between iOS devices and Android devices and evidence on barriers to entry and expansion.

19. As set out in Chapter 3, Apple and Google have an effective duopoly in the provision of mobile operating systems. Because Apple's iOS is only used in Apple devices, Apple's shares of mobile devices and mobile operating systems mirror each other. In 2021, Apple was the largest mobile operating system provider and had [50-60]% share of all active smartphones and [50-60]% of active tablets in the UK.[10] Its revenue share was 75% for smartphones in 2021 when considering the value of devices shipped into the UK.[11]

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[9] For example, Ofcom's Technology Tracker survey shows that in 2021 65% of respondents reported (aged 16 and over) owning a tablet while 88% reported having a smartphone for personal use. See Communications Market Report 2021 – Interactive data - Ofcom.
[10] CMA analysis of data from market participants. Apple provided data on "Transacting accounts". Transacting accounts correspond to the number of accounts that performed a transaction (download, purchase etc.) on the device. A transacting account could be linked to more than one smartphone/tablet, and one smartphone/tablet could be linked to more than one transacting account. This means that the number of transacting accounts may over or underestimate the number of active smartphones/tablets.
[11] As set out in Appendix B, this data is based on the volume of devices shipped not the volume of those actually sold and on the average advertised prices (excluding VAT) rather than actual selling prices.

20. In both cases Apple has had persistently high shares of supply – indicating that its position is entrenched. Apple's share of active smartphones has been [50-60]% since at least 2015,[12] and data from Statcounter set out in Appendix B shows that it has had a high share of active smartphones since 2009. Data from Statcounter set out in Appendix B shows that it has had a high share of active tablets since 2012, while it has declined over time our analysis of data from market participants shows that Apple's share of active tablets has been [50-60]% and [50-60]% in each year since 2017.[13]

21. Further, based on current evidence we found that there is limited effective competition between iOS and Android devices and this is unlikely to change. As set out in Chapter 3 this is based on:

- The supply of mobile devices and operating systems has segmented into broadly two groups – higher-priced and lower-priced devices. Apple's iOS devices accounted for 77% of devices sold for over £300 in 2021 whereas Android devices account for 100% of devices sold for £300 or less.

- Most users purchasing a device are buying a replacement device and rarely switch between operating systems when doing so. There appear to be material perceived barriers to switching which include: (i) learning costs; (ii) barriers relating to the transfer of data and apps across devices; and (iii) barriers related to losing access to other devices (including connected devices) and having a worse experience of interacting with friends' and family's devices. The perceived barriers to switching are also higher among iOS users than Android users as set out in Appendix D. While the actual barriers to switching appear to be lower than the perceived barriers, just over a third of users that had switched operating system were dissatisfied with at least one aspect of the switching journey.[14]

- Apple has been able to earn a return on capital employed on its devices that is well above any normal benchmark over the last five years. Google

[12] CMA analysis of data from market participants. Apple provided data on "Transacting accounts". Transacting accounts correspond to the number of accounts that performed a transaction (download, purchase etc.) on the device. A transacting account could be linked to more than one smartphone, and one smartphone could be linked to more than one transacting account. This means that the number of transacting accounts may over or underestimate the number of active smartphones.
[13] CMA analysis of data from market participants. Apple provided data on "Transacting accounts". Transacting accounts correspond to the number of accounts that performed a transaction (download, purchase etc.) on the device. A transacting account could be linked to more than one tablet, and one tablet could be linked to more than one transacting account. This means that the number of transacting accounts may over or underestimate the number of active tablets.
[14] See Appendix D.

uses Android devices to support its highly profitable search advertising business and its increasingly important app store business.

22. In addition, we consider that Apple benefits from material barriers to entry and expansion faced by potential rival providers of operating systems. This includes:

- Strong indirect network effects and economies of scale in the development and maintenance of mobile operating systems. Operating systems need users to attract content providers/app developers and need content providers/app developers to attract users. This means it is difficult for a new operating system to gain traction as they cannot attract one set of customers without the other and this also makes it even more difficult to achieve scale and overcome barriers due to economies of scale.

- Any new operating system seeking to compete with Apple would either have to also manufacture its own devices or to license its operating system to third-party device manufacturers. All of the manufacturers currently licensing an operating system in the UK use Google's version of Android.[15] As detailed in Chapter 3, attracting manufacturers away from Google would entail significant challenges due to Google's agreements with and payments to manufacturers which mean that switching away from Android would entail manufacturers missing out on significant financial benefits and losing access to Google's core apps and proprietary APIs necessary to ensure as many native Android apps as possible work on a given device.

- The perceived barriers to users switching away from their current mobile ecosystems would substantially limit the chances of a new entrant.

23. These barriers to entry and expansion are further evidence that Apple's position is entrenched as, based on current evidence, it is not constrained by the prospect of other providers entering and expanding and this is unlikely to change.

24. Based on these findings, we took the view in Chapter 3 that **Apple has substantial and entrenched market power in the supply of mobile operating systems**. Given Apple's business model, which inextricably links

[15] Based on the information available. Other operating systems are used in first-party devices by Apple, Amazon and Huawei.

iOS and devices,[16] **this finding relates to its devices and operating system in combination**.

Strategic position

25. There is strong evidence that, based on the proposed test for Strategic Market Status, Apple has a strategic position in the digital activity of mobile operating systems and the devices on which they are installed, for the following reasons.

26. First, in the UK, Apple has, since launching its first iPhone in 2007, achieved a **very significant size and scale** in its supply of mobile devices and operating systems, with its products being used by a very high proportion of the population. In 2021, there were nearly [30-40] million accounts making transactions on iPhones and [10-20] million accounts making transactions on iPads in the UK compared to a UK population of 67 million.[17] In addition, Apple directly generates revenues of £[5.5-6] billion from iPhone sales and £[1-1.5] billion from iPad sales in the UK.[18] As set out in Appendix C, we found that Apple's device sales are highly profitable.

27. Second, Apple's mobile devices and operating system are the entry point for users into Apple's ecosystem. Apple can use this position to control both the apps and services that are pre-installed on Apple devices and control the main **gateways** through which online content can be accessed by and delivered to users (which in themselves are significant in scale and size, connecting a large number of users and businesses, as set out below). In particular, through its control of iOS, Apple is able to control:

    - How native apps are distributed and installed as well as what those native apps are able to do. For example, Apple has mandated that native apps can only be installed through its own App Store as outlined in Chapter 4. Through the iOS APIs that it makes available, Apple can also determine how native apps can integrate with Apple mobile devices in terms of the aspects of software and hardware they can access – for example, restricting third-party apps from accessing the NFC technology used for making contactless payments – as outlined in Chapter 6.

[16] That is, because Apple does not use any other alternative operating system on its mobile devices and does not license iOS to any other mobile device manufacturers such that all Apple mobile devices use iOS and all mobile devices using iOS are Apple devices.
[17] Population estimates - Office for National Statistics.
[18] We used Bank of England data to convert from US Dollars into Great British Pounds, this was done using the yearly data from XUAAUSS | Bank of England | Database.

- How web content can be distributed as well as what web-based alternatives to native apps are able to do. For example, Apple has mandated that all web browsers on iOS devices must use Apple's WebKit browser engine, such that, as outlined in Chapter 5, Apple effectively controls which features browsers are able to support, thereby determining the extent to which they can support web apps. Additionally, and more generally, Apple determines how web-based alternatives can integrate with Apple devices in terms of the aspects of software and hardware they can access.

28. Apple's control over iOS also allows it **to determine the 'rules of the game'** by determining which APIs are made available to third parties and on what terms. This is important as the functionality of native apps and browser engines on a mobile device is determined by which APIs they can access.

29. Third, Apple can use its control over its own mobile devices and iOS to **extend its market power in mobile devices and iOS into other markets**:

- Apple is able to confer an advantage on its own apps through restricting access to certain elements of its devices' hardware and software, pre-installation and the setting of defaults in a way that helps to protect its own apps from competition. To the extent that this promotes the use of Apple's first-party apps, services and connected devices, this also supports Apple's position in mobile devices and operating systems as Apple's first-party apps, services and connected devices act as a barrier to switching as outlined in Chapter 3.

- Apple can use its control over iOS to set policies around where native apps can be installed from (eg it bans sideloading), which allows it to reinforce the position of the App Store as the sole means of accessing native apps. Apple can also use its position at the operating system level to enforce policies such as the restrictions on browser engines and ATT which, as set out in Chapter 5 and Chapter 6 respectively, can serve to undermine alternatives to the App Store and thus entrench the market power of the App Store. In addition, this also enables Apple to use its market power in operating systems to competitively advantage its advertising services, as ATT increases the value of Apple's ad services compared to the advertising services of rivals who offer ways to advertise apps to iOS users.

Summary of our views in relation to mobile devices and mobile operating systems

30. In combination, our findings to date and the related evidence support the view that Apple's mobile operating systems and the devices on which they are installed are inextricably linked and would be a 'digital activity'; that Apple has substantial and entrenched market power in relation to this digital activity; and that Apple's position in respect of its mobile operating systems and the devices on which they are installed is strategic.

31. Given this, in our view the available evidence indicates Apple would **meet the government's currently proposed test for SMS in relation to the supply of mobile operating systems and the devices on which they are installed.**

Native app distribution

Relevant 'digital activity'

32. App developers need access to the APIs within iOS in order to make their products and services available on iOS devices. Currently access to these APIs is controlled via Software Development Kits (SDKs) that are made available to developers joining Apple's Developer Program.[19] App developers can use these SDKs to develop native iOS apps which can only be distributed through Apple's App Store. In order to distribute their apps through the App Store app developers must adhere to the terms contained in a number of agreements and guidelines. The rules contained within these agreements and guidelines are unilaterally interpreted and enforced through Apple's app review process, to which all native apps (both when new and when being updated) are subject.

33. We consider that there is a specific activity carried out by Apple which involves the supply of products and services related to the development and distribution of native apps on iOS devices and this includes at least the following products and services provided to users and app developers:

- Apple's App Store and associated advertising services.
- Apple's iOS and related services that allow app developers to access Apple's iOS to supply their products and services in native iOS apps (eg Apple's Developer Program, SDKs and App Store Review Process).

[19] What's Included - Apple Developer Program.

34. While the ability of app developers to access relevant iOS APIs is currently controlled through the App Store and related products/services, we consider it to be important to define the activity more widely than just the App Store. This is to ensure the SMS designation is flexible enough in the event that, for example, Apple was to change the structure of how it provides app developers with access to iOS APIs.

35. **We consider that this activity is 'digital'** because all the products and services provided are based on digital technologies and facilitate the distribution of computer software by app developers to users. This form of computer software is widely recognised and understood to be digital technology.

Substantial and entrenched market power

36. We consider that the evidence identified in this study supports the case that Apple has substantial and entrenched market power in the distribution of native apps. This is based on its shares of supply (including changes over time), evidence on current competition and evidence on barriers to entry and expansion.

37. As outlined in Chapter 4, Apple's rules mean that native apps can only be installed through Apple's App Store. In particular, native apps cannot be distributed in any other way on iOS devices unless the user engages in a process called 'jailbreaking' which is technically difficult and a violation of Apple's terms.[20]

38. This has been the case since Apple introduced the App Store to its mobile devices in 2008 and means that since then Apple has essentially had a 100% share of supply in terms of the distribution of native apps on Apple devices. Apple's rules mean that this market power is also entrenched as no rivals can feasibly provide native app distribution services on iOS devices.

39. Use of the App Store in the UK is also increasing over time, for example in the UK:

- the number of users who downloaded at least one app in a given month has increased from over 18 million users in January 2016 to over 25 million users in December 2021;

[20] Apple said that engaging in jailbreaking is a violation of the iOS end-user software license agreements and that, under those agreements, Apple may deny service for an iPhone or iPad that has installed any unauthorised software via jailbreaking.

- the overall number of first-time downloads per year has increased from [1-1.5] billion in 2016 to [1-1.5] billion apps in 2021;[21] and

- the value of customer billings processed by Apple IAP has increased significantly from [✂] in 2016 to [✂] in 2021.

40. Further, based on current evidence as detailed in Chapter 4, we do not consider that the App Store is constrained by other methods through which app developers can distribute their content to users and this is unlikely to change.

- The development and usage of web apps is substantially lower than native apps. Much of this is down to restrictions on the features and functionalities of web apps that are imposed by Apple through its WebKit browser engine. These restrictions diminish developers' incentives to develop web apps for all mobile devices and operating systems (ie including Android devices). This is because the idea of a web app is to develop one app to be used on browsers on any operating system instead of developing separate native apps for each operating system.

- The App Store does not face a material competitive constraint from Google's Play Store for either app developers or users.

  - The largest app developers accounting for the most downloads tend to multi-home on both the App Store and Play Store and would not delist due to the volume, value and uniqueness of users on each – this is particularly the case in relation to Apple whose users spend more.

  - An iOS user would need to purchase a new device in order to access the Play Store. As found in Chapter 3, such switching is limited in practice and there are additional factors, such as the transparency of app store conditions (eg the price, quality and range of apps), that make such switching unlikely in response to changes in the price or quality of apps available in different app stores.

- The App Store faces a limited competitive constraint from alternative devices such as PCs, laptops or games consoles. These devices are primarily used for different purposes and are mainly viewed by users as complements rather than substitutes for the use of native apps on mobile devices. There is also limited evidence that users would switch away from purchasing content and features in native apps to purchasing it through

[21] This number decreased from just under [1.5-2] billion apps in 2020.

these alternative devices or alternative channels (eg browsers on mobile devices).

41. Based on these findings and as explained in Chapter 4, **Apple has, in our view, substantial and entrenched market power in the distribution of native apps.**

Strategic position

42. Applying the test for Strategic Market Status currently proposed in the government's consultation, we also consider that **Apple's position in the digital activity of native app distribution is 'strategic'** (as currently defined in the consultation), for the following reasons.

43. First, in the UK Apple has achieved a **very significant size and scale** in mobile app stores with the App Store being used by a very high proportion of the population. The App Store is the only app store on all iPhones and iPads and, as set out above, in the UK in 2021 there were nearly [30-40] million transacting accounts using iPhones in 2021 and [10-20] million transacting accounts using iPads. In addition, Apple's net revenue from transactions through Apple IAP was £[400-600] million in the UK in 2021[22,23] and on average [20-30] million users downloaded at least one app from the App Store in any given month in the UK in 2021.

44. Second, the App Store is an important access point or gateway to users for a diverse and large range of businesses. In particular, in the UK in 2021:

- on average [20-30] million users downloaded at least one app from the App Store in any given month;
- roughly [500,000-600,000] app developers had roughly [1-1.5] million apps on the App Store; and
- the value of customer billings processed by Apple IAP was [✂].

45. Third, Apple's control over access to the App Store means that it is able to **determine the 'rules of the game'** for app developers seeking to distribute apps on iOS, in particular through its development of SDKs and through Apple's app review process (and the ability to reject apps or app updates which do not comply with its rules).

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[22] That is, the revenue that Apple retain from transactions made through their payments systems in the UK.
[23] We used Bank of England data to convert from US Dollars into Great British Pounds, this was done using the yearly data from XUAAUSS | Bank of England | Database.

46. Fourth, Apple can use its control over app distribution on iOS to:

- **Extend the market power of the App Store to gain a competitive advantage in other markets**: in particular, Apple is able to confer an advantage on its own apps which do not have to comply with rules such as the payment of a commission to Apple. In addition, Apple is able to use its position to gain access to confidential information which may assist it in developing apps, services and devices in a way which departs from competition on the merits. To the extent that this promotes the use of Apple's first-party apps, services and connected devices, this can also allow Apple to further entrench its market power in mobile devices and operating systems by strengthening the perceived barriers outlined in Chapter 3. In addition, restrictions on cloud gaming on iOS may also entrench Apple's position in mobile devices and operating systems because gamers playing cloud-based games are not constrained by the processing capabilities or storage capacity on a device and so would be able to have essentially the same gaming experience as they get on iOS with a lower end, less expensive mobile device.

- **Entrench the market power of the App Store**: in particular, Apple can enforce new policies such as those relating to cloud gaming and ATT, which, as set out in Chapter 6, undermine alternatives to the App Store and thus serve to entrench further the market power of the App Store.

Summary of our views in relation to native app distribution

47. In combination, our findings to date and the related evidence support the view that Apple's supply of products and services related to the development and distribution of native apps on iOS devices would be a 'digital activity'; that Apple has substantial and entrenched market power in relation to this digital activity; and that Apple's position in respect of native app development and distribution is strategic.

48. Given this, in our view the available evidence indicates that Apple would **meet the government's currently proposed test for SMS in relation to native app distribution.**

Mobile browsers and browser engines

Relevant 'digital activity'

49. As outlined in Chapter 5, Apple requires all browsers on iOS devices to use its WebKit browser engine, meaning that in addition to Apple's own browser, Safari, being based on WebKit, all other browsers on iOS are too.

50. We consider that there is a specific activity carried out by Apple which relates to the supply of mobile browsers and browser engines which covers both Safari and WebKit.

51. We consider that this activity is 'digital' because the products and services provided are based on digital technologies and facilitate the distribution of digital content, as well as in certain cases software, by content providers to users. The primary use of a browser is to access the web and browse the internet – these activities are widely recognised and understood to be digital in nature.

Substantial and entrenched market power

52. We consider that the evidence identified in this study supports the case that Apple has substantial and entrenched market power in the supply of mobile browsers and browser engines. This is based on its shares of supply (including changes over time), evidence on current competition and evidence on barriers to entry and expansion.

53. As outlined in Chapter 5, as all browsers on iOS are required to use WebKit, Apple does not face any competition in the supply of browser engines on iOS devices. As a result, Webkit has a share of supply of over 50% on mobile devices in the UK (ie matching Apple's share of mobile devices).

54. As shown by the data presented in Chapter 5:

- with respect to browsers, Safari has a share of supply of almost 90% on iOS devices in the UK;
- Safari has a share of supply of around 50% across all mobile devices; and
- this share has been relatively stable over the last decade, moving within a range of just under 50% and just under 60% – indicating that its position is entrenched.

55. Further, based on current evidence we consider that the constraint from other browsers is limited for several reasons and this is unlikely to change:

- First, there are limitations to the ability of rival browsers to differentiate themselves on factors such as speed and functionality due to the WebKit restriction. This is driven by the browser engine being the core component of every browser and primarily determining the functionality a browser can offer.

- Second, Apple, through its control of the iOS operating system, restricts the ability of rival browsers to access APIs that are used by Safari.

- Third, Apple has a closed system as far as pre-installation and pre-set default settings for browsers on iOS are concerned: Safari is the only pre-installed browser on iOS and is set as the default browser. Pre-installation and default settings are important in determining consumer choice, implying that this constitutes a key barrier for other browsers to acquire users. This is reinforced by Apple making it difficult for users to change the default browser.

56. Based on these findings, we took the view in Chapter 5 that **Apple has substantial and entrenched market power in the supply of its mobile browser and browser engine.**

Strategic position

57. We consider that, based on the government's test for Strategic Market Status as currently proposed, **Apple's position in the digital activity of browsers and browser engines can be considered 'strategic'** for the following reasons.

58. First, Safari accounted for 48% of all web page views on mobile devices in the UK in 2020. When considering all mobile browsers based on Apple's WebKit browser engine, this figure increases to over 50%, mirroring Apple's share of supply in mobile devices. In addition, Apple generates substantial revenue from Safari – in 2021 Google's estimated payments to Apple for search default status on Safari were £[1-1.5] billion for the UK, with the substantial majority of this (£[0.5-1] billion) relating to mobile. To this end, Apple has achieved **significant size and scale** in relation to browsers and browser engines.

59. Second, other than through app stores, web browsers are the most important way for users of mobile devices to access content and services over the internet. In addition to the important role that browsers play in enabling users to search for and consume content, browsers are one of the key sources of traffic for search engine providers as well as other businesses that want to reach users with their content and products online. Browsers are hence an important gateway through which online content can be accessed by and delivered to users.

    - The Safari browser, given its position, is an important access point or gateway to users for a diverse and large range of businesses. This

includes both online content providers and more specifically search providers such as Google Search and Microsoft Bing.

- The WebKit browser engine, as the browser engine for all browsers on iOS devices, allows Apple to determine what user data is collected on other browsers on iOS devices. It further gives Apple the ability to control what functionality is offered by any browser on iOS and, in particular, restrict the support for web apps.[24]

60. Third, Apple's control of WebKit allows it, in effect, to **determine the 'rules of the game'** for those using web browsers on iOS, given that all browsers on iOS are required to use WebKit. In particular (and as noted above in the context of browsers' role as important gateways to online content), by requiring the use of WebKit can largely determine:

- the functionality that can be offered by any web browser on iOS. In turn, the functionality of these browsers determines the features, functionality and performance of web-based alternatives such as web apps and, therefore, the extent to which these alternatives can compete with native apps; and

- what user data can be collected by website on any web browser on iOS. This then influences the effectiveness of digital advertising on iOS.

61. Fourth, Apple control of WebKit and its position in browsers give it scope to:

- Limit the success of web apps and increase the take up of native apps (which can only be accessed through its App Store). This could **reinforce Apple's very strong position in relation to the distribution of native apps on iOS as well as in the supply of mobile devices and operating systems**.[25]

- Make open display advertising less attractive on iOS, by limiting user tracking through its implementation of ITP in WebKit. Any such deprecation of display advertising may in turn decrease the competitive constraint from display advertising on search advertising. It could also reduce the viability of the web as a content distribution channel (given the important role of display advertising in funding web content), which would **reinforce**

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[24] Apple's limited support for web apps on iOS diminishes developers' incentives to develop web apps for all mobile devices and operating systems (ie including Android devices), given that the idea of a web app is to develop one app to be used on browsers on any operating system.
[25] As set out in Chapter 3, indirect network effects are a barrier to entry for mobile operating systems. Web apps could mitigate these indirect network effects as web content is available everywhere which makes it easier of new entrants to quickly gain access to a large volume of quality content without relying on app developers incurring the costs of developing native apps.

Apple's very strong positions in relation to the distribution of native apps on iOS as well as in the supply of mobile devices and operating systems.

Summary of our views in relation to mobile browsers and browser engines

62. In combination, our findings to date and the related evidence support the view that Apple's mobile browser and browser engine would be a 'digital activity'; that Apple has substantial and entrenched market power in relation to that activity; and that Apple's position in respect of mobile browsers and browser engines is 'strategic'.

63. Given this, in our view the available evidence indicates Apple would **meet the government's currently proposed test for SMS in relation to mobile browsers and browser engines.**

Assessment on Strategic Market Status for Apple

64. The evidence and findings set out in this report, and supporting appendices, indicate that Apple would, in our view, meet the criteria for SMS currently suggested in the government's consultation for each of the following activities within its mobile ecosystem: (i) mobile operating systems and the devices on which they are installed; (ii) native app distribution; and (iii) mobile browsers and browser engines.

65. As set out in its response to the consultation, the government intends to adopt a minimum revenue threshold in legislation and is considering what the appropriate minimum threshold would be. For the present purposes we are assuming that Apple, based on its UK revenues of £[10-15] billion, will meet the threshold determined by the government which will ultimately be a matter for the DMU to establish.

Google

Mobile devices and mobile operating systems

Relevant 'digital activity'

66. Unlike with Apple and iOS, Google's Android operating system is not available only to mobile devices that Google manufactures. Indeed, while Google's Android has a large share of supply, Google's Pixel devices have a very small share of both smartphones and tablets (in the UK in 2021 [0-5]% of newly activated Android smartphones were Pixel and less than [0-5]% of new

Android tablets sold were Pixel).[26] As such Google's Pixel devices and its Android operating system are separable and, based on the current circumstances (and the way the SMS framework is currently envisaged in the government's consultation), we would not envisage that Pixel devices would be part of any designated activity.

67. Instead any designated activity would, in our view, more appropriately focus on Google's version of Android which has a share of roughly [40-50]% of active smartphones and [20-30]% of active tablets in the UK in 2020, as set out in Chapter 3. Currently Google's version of Android is the only licensable mobile operating system in the UK (and is the only large licensable operating system we are aware of internationally)[27] with other operating systems with any material presence in the UK only being used in first-party devices.[28]

68. Google's version of Android includes the open-source Android code and Google Mobile Services which includes both a set of core Google apps (Play Store, Google Maps, etc.) and Google APIs (Google Play Services). Our view based on the evidence we have seen to date is that any designated activity related to Google's version of Android would likely include at least the Google Play Services of Google Mobile Services, given that many native Android apps integrate with these APIs to provide features and functionalities (eg push notifications). This means that many native Android apps may not function properly on devices that do not include Google Play Services.

69. Consideration might also be given to including other elements of Google Mobile Services. For example, some native Android apps also integrate with elements of Google's core apps to provide certain features and functionality (eg to provide mapping functionality based on Google Maps). Further, it is likely that the Play Store would also be included in any such designation as Google Play Services is updated via the Play Store.

70. **We consider that this activity is 'digital'** because mobile operating systems are a layer of computer software that allows other software (eg native apps, web apps) to operate on a mobile device including allowing other software to make use of the mobile device hardware. Without the mobile operating system most users would not be able to access any digital content. This form of computer software is widely recognised and understood to be digital technology.

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[26] CMA analysis of data from market participants.
[27] For example, Android has a share of just over 70% of worldwide smartphone operating systems based on Statcounter data. See Mobile Operating System Market Share Worldwide | Statcounter Global Stats.
[28] Apple's iOS, Amazon's Fire OS and Huawei's version of Android using Huawei Mobile Services are all only used in first-party devices.

71. Our view based on the evidence we have seen to date is that this would include Google's version of Android not only on smartphones, but also on tablets as:

- the concerns we have heard in relation to the key gateways in Google's mobile ecosystem, the Play Store and its position in browsers and browser engines, relate to both smartphones and tablets; and
- apart from some differences highlighted in shares of supply (resulting from the presence of a material third operating system, Amazon's Fire OS, which had a [20-30]% share of active tablets in 2021), ownership rates (lower for tablets)[29]and use cases, no market participants have suggested that tablets should be treated differently to smartphones.

Substantial and entrenched market power

72. We consider that the evidence identified in this study supports the case that Google has substantial and entrenched market power in the supply of mobile operating system. This is based on its shares of supply (including changes over time), evidence on current competition between iOS devices and Android devices and evidence on barriers to entry and expansion.

73. As set out in Chapter 3, Apple and Google have an effective duopoly in the provision of mobile operating systems. In 2021, Android devices made up roughly [40-50]% of all active smartphones and [20-30]% of active tablets in the UK.

74. In relation to smartphone operating systems, Google has had a persistently high share of supply – indicating that its position is entrenched. In the UK Android devices have had a share of [40-50]% of active smartphones since at least 2015 and data from Statcounter set out in Appendix B shows that Android has had a high share of active smartphones and been the second largest smartphone operating system since 2013. In contrast, Android devices have had a share of active tablets of between [20-30]% in recent years.

75. Further, based on current evidence we found that there is limited effective competition between iOS and Android devices and this is unlikely to change. As set out in Chapter 3 this is based on:

- The supply of mobile devices and operating systems has segmented into broadly two groups – high-priced and low-priced devices. Apple's iOS

[29] For example, Ofcom's Technology Tracker survey shows that in 2021 65% of respondents reported (aged 16 and over) owning a tablet while 88% reported having a smartphone for personal use. See Communications Market Report 2021 – Interactive data - Ofcom.

devices accounted for 77% of devices sold for over £300 in 2021 whereas Android devices account for 100% of devices sold for £300 or less.

- Most users purchasing a device are buying a replacement device and rarely switch between operating systems when doing so. There appear to be material perceived barriers to switching which include: (i) learning costs; (ii) barriers relating to the transfer of data and apps across devices; and (iii) barriers related to losing access to other devices (including connected devices) and having a worse experience of interacting with friends' and family's devices. The perceived barriers to switching are also higher among iOS users than Android users as set out in Appendix D. While the actual barriers to switching appear to be lower than the perceived barriers, just over a third of users that had switched operating system were dissatisfied with at least one aspect of the switching journey.[30]

- Apple has been able to earn a return on capital employed on its devices that is well above any normal benchmark over the last five years. Google uses Android devices to support its highly profitable search advertising business and its increasingly important app store business.

76. In addition, Google benefits from material barriers to entry and expansion faced by potential rival providers of operating systems. These include:

- Strong indirect network effects and economies of scale in the development and maintenance of mobile operating systems. Operating systems need users to attract content providers/app developers and need content providers/app developers to attract users. This means it is difficult for a new operating system to gain traction as they cannot attract one set of customers without the other and this also makes it even more difficult to achieve scale and overcome barriers due to economies of scale.

- Any new entrant seeking to compete with Google by licensing its mobile operating system to existing manufacturers would have to attract those manufacturers away from Google's version of Android. As detailed in Chapter 3, attracting manufacturers away from Google would entail significant challenges due to Google's agreements with and payments to manufacturers which mean that switching away from Android would entail manufacturers missing out on significant financial benefits and losing access to Google's core apps and proprietary APIs necessary to ensure as many native Android apps as possible work on a given device.

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[30] See Appendix D.

- The perceived barriers to users switching away from their current mobile ecosystems would substantially limit the chances of a new entrant.

77. Given these barriers to entry and the fact that Android is the only licensable mobile operating system in the UK (and is the only large licensable operating system we are aware of internationally),[31] manufacturers appear to have no credible alternative option but to use the Android operating system.

78. Overall, these barriers to entry and expansion are further evidence that Google's position is entrenched as, based on current evidence, it is not constrained by the prospect of other providers entering and expanding and this is unlikely to change.

79. Based on these findings, we took the view in Chapter 3 that **Google has substantial and entrenched market power in the supply of mobile operating systems.**

Strategic position

80. We consider there to be strong evidence that, based on the proposed test for Strategic Market Status, **Google has a strategic position in the digital activity of mobile operating systems** for the following reasons.

81. First, in the UK, Google has achieved a **very significant size and scale** in its supply of mobile operating systems, with its products being used by a very high proportion of the population. There were over [30-40] million active Android smartphones in the UK in 2021 and over [5-10] million active Android tablets compared to a UK population of 67 million.[32]

82. Second, Android is the entry point into Google's ecosystem and through its agreements with and payments to manufacturers Google can use this position to influence the apps and services that are pre-installed on Android devices and the main **gateways** through which content can be accessed by and delivered to users (with these gateways themselves being significant in scale and size connecting a large number of users and businesses, as set out below).

83. In particular, through its control of essential APIs contained with Google Play Services, its suite of core apps (eg Google Search, Google Maps, Gmail, YouTube) with which many native Android apps integrate, and its revenue

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[31] For example, Android has a share of just over 70% of worldwide smartphone operating systems based on Statcounter data. See Mobile Operating System Market Share Worldwide | Statcounter Global Stats, last accessed on 6 June 2022.
[32] Population estimates - Office for National Statistics (ons.gov.uk).

sharing agreements with manufacturers, Google is able to influence which elements of software and hardware can be accessed by third parties and seek to ensure that other key Google apps are pre-installed prominently. This includes the Play Store and Google Chrome, which are gateways to users accessing native apps and web content on mobile devices and other core Google apps.

84. Third, Google's control over Android and related services allows Google **to determine the 'rules of the game'** for manufacturers and developers. For instance, Google can use its control over Google Play Services to determine the extent to which manufacturers can differentiate their versions of Android by requiring them to respect certain compatibility requirements;[33] Google determines how native apps downloaded outside the Play Store can be updated[34] and how the sideloading process works, including the steps needed and the language used;[35] Google determines where certain APIs are placed (eg in the open-source version of Android or in the proprietary Google Play Services) and how accessible they are to manufacturers; finally, there is evidence of Google using its control over Android to limit third parties' access to device functionality.[36]

85. Fourth, Google's control over the Android operating system gives it scope to:

- **extend its market power** from its operating system into other areas (eg search, search advertising[37] and native app distribution); and
- as a result, **further entrench the market power** of Google's version of Android.

86. In particular, through its control of essential APIs and its agreements with manufacturers (including revenue sharing agreements largely based on revenue generated from search advertising) Google is able to confer an advantage on its own apps – including Google Chrome and Google Search (which are key gateways for search providers), the Play Store and other core apps – in a way that helps to protect those apps from competition. This is done through pre-installation of those apps and, in some cases, prominent placement, default status (eg for Google Search) and, in some cases,

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[33] Respecting these requirements is needed for manufacturers to be able to license Google Play Services.
[34] This excludes native apps downloaded through the manufacturer's own store if this is pre-installed on the device.
[35] Even though manufacturers are the ones to ultimately implement such process and there is some limited evidence of them making changes to it. See Chapter 4.
[36] In particular, we have heard concerns that Google limits the ability of third-party voice assistants to access device functionality, relative to their own voice assistants. For example, Google does not allow access to functionality that would allow third-party voice assistants to be activated through the use of a 'wake word', as is possible with its own voice assistants. See Chapter 6.
[37] See, CMA (2020), Market Study into Online Platforms and Digital Advertising, Final Report.

ensuring that no similar services are preloaded on the device (for the Play Store).

87. Moreover, Google's extension of market power from Android to search advertising and native app distribution further entrenches its position in Android.

- Given manufacturers can only get the Play Store if they license Google's version of Android, ensuring pre-installation and prominent placement of it translates into a larger user base (of both developers and consumers), which in turn encourages manufacturers to license Google's version of Android to be able to pre-install the Play Store on their devices.

- The fact that Google uses its revenue sharing agreements to ensure that Google Search is the default search engine at certain points at which users access search services, enables it to collect valuable data through the Android operating system that supports its position in search advertising.[38] This is likely to translate into higher search advertising revenue and, in turn, higher payments to encourage manufactures to license Google's version of Android.

Summary of our views in relation to mobile operating systems

88. In combination, our findings to date and the related evidence support the view that Google's mobile operating system would be a 'digital activity'; that Google has substantial and entrenched market power in relation to that activity; and Google's position in respect of its mobile operating system is 'strategic'.

89. Given this, in our view the available evidence indicates Google would **meet the government's currently proposed test for SMS in relation to the supply of mobile operating systems.**

Native app distribution

Relevant 'digital activity'

90. App developers need access to the APIs within the Android operating system in order to make their products/services available on Android devices. In addition, many app developers use APIs within Google Play Services, a

[38] As set out in the CMA's market study into online platforms and digital advertising, Android provides Google with data advantages that create a barrier to entry and expansion for rivals in search advertising. CMA (2020), Market Study into Online Platforms and Digital Advertising, Final Report, paragraph 5.60.

Google middleware that sits on top of Android.[39] Further, Google makes decisions about whether to place APIs within the Android Open-Source Project or Google Play Services as discussed in Chapter 3.

91. As set out above, through its control of the essential APIs contained within Google Play Services, upon which many native Android apps rely to work properly, its suite of core apps (eg Google Search, Google Maps, Gmail, YouTube) with which many native Android apps integrate for enabling certain functionalities, and its revenue sharing agreements with manufacturers, Google is able to influence which elements of software and hardware can be accessed by third parties.

92. While app developers can then use a number of different methods to distribute their Android apps, the vast majority of apps are distributed through the Play Store as set out in Chapter 4. In order to distribute their apps through Google's Play Store, app developers must adhere to the terms contained in a number of agreements and guidelines. The rules contained within these agreements and guidelines are unilaterally interpreted and enforced through Google's app review process to which all native apps (both when new and when being updated) are subject.

93. We consider that there is a specific activity carried out by Google which relates to the supply of products and services related to the development and distribution of native apps on Android devices and this includes at least the following products and services provided to users and app developers:

- Google's Play Store and associated advertising services; and
- Google's Google Play Services and related services that allow app developers to access Google Play Services APIs to supply their products and services in native Android apps (eg its Developer Program, Software Development Kits (SDKs) and Play Store review process).

94. We consider that this activity is 'digital' because all the products and services provided are based on digital technologies and facilitate the distribution of computer software by app developers to users. This form of computer software is widely recognised and understood to be digital technology.

[39] For example, Google explained that, as of April 2022, [70-80]% of apps available on the Play Store use at least one Google Play Service API.

Substantial, entrenched market power

95. We consider that the evidence identified in this study supports the case that Google has substantial and entrenched market power in the distribution of native apps. This is based on its shares of supply (including changes over time), evidence on current competition and evidence on barriers to entry and expansion.

96. As outlined in Chapter 4, Google's Play Store is the main distribution channel for native apps on Android devices. When looking across Android devices as well as devices using other versions of Android (Huawei's HMS devices and Amazon's Fire OS devices), the Play Store has accounted for [90-100]% of downloads in every year since at least 2017 (the first full year of our data) – indicating that its position is entrenched.

97. Based on current evidence, the constraint from alternatives within Google's mobile ecosystem is limited and this is unlikely to change:

- pre-installation is not a viable alternative for the vast majority of app developers;
- alternative Android app stores only account for [0-10]% of downloads and face material barriers such as indirect network effects and Google's agreements which lead to the pre-installation and prominent placement of the Play Store; and
- sideloading is not widely used by users or app developers including due to the process users have to follow, which includes warnings of the potential security risks of sideloading.

98. The distribution of native apps through the Play Store is growing over time – for example, in the UK:

- the number of downloads per year has increased from [1.5-2] billion in 2017 to [2-2.5] billion in 2021; and
- there has been rapid growth in the value of customers billings on apps (including Play Pass) processed by Google Play's billing system, which have increased from [✂] in 2017 to [✂] in 2021.

99. Further, based on current evidence as detailed in Chapter 4, we do not consider that Google's Play Store is constrained by other methods through which app developers can distribute their content to users and this is unlikely to change.

- The development and usage of web apps is substantially lower than native apps. Much of this is down to restrictions on the features and functionalities of web apps that are imposed by Apple through its WebKit browser engine, as detailed above. These restrictions diminish developers' incentives to develop web apps for all mobile devices and operating systems (ie including Android devices). This because the idea of a web app is to develop one app to be used on browsers on any operating system instead of developing separate native apps for each operating system.

- The Play Store does not face a material competitive constraint from Apple's App Store for either app developers or users.

  - The largest app developers accounting for the most downloads tend to multi-home on both the App Store and Play Store and would not delist due to the volume, value and uniqueness of users on each – this is particularly the case in relation to Apple whose users spend more.

  - An Android ser would need to purchase a new device in order to access the App Store. As found in Chapter 3, such switching is limited in practice and there are additional factors, such as the transparency of app store conditions (eg the price, quality and range of apps), that make such switching unlikely in response to changes in the price or quality of apps available in different app stores.

- The Play Store also faces a limited competitive constraint from alternative devices such as PCs, laptops or games consoles. These devices are primarily used for different purposes and are mainly viewed by users as complements rather than substitutes for the use of native apps on mobile devices. There is also limited evidence that users would switch away from purchasing content and features in native apps to purchasing it through these alternative devices or alternative channels (eg browsers on mobile devices).

100. Based on these findings, and as explained in Chapter 4, **Google has, in our view, substantial and entrenched market power in the distribution of native apps.**

Strategic position

101. Applying the test for Strategic Market Status currently proposed in the government's consultation, we also consider that **Google's position in the**

digital activity of native app distribution is 'strategic' (as currently defined in the consultation), for the following reasons.

102. First, in the UK Google has achieved a **very significant size and scale** in mobile app stores with the Play Store being used by a very high proportion of the population. The Play Store is pre-installed on almost all Android devices and, as set out above, there were over [30-40] million active Android smartphones in the UK in 2021 and over [5-10] million active Android tablets. On any given day during a short period in 2022, on average between [1.5-2.5] million users downloaded at least one native app through the Play Store.[40] In addition, Google directly generated revenue on apps from the Play Store of £[200-400] million via Google Play's billing system in the UK in 2021.[41]

103. Second, Google's Play Store is the main way to distribute native apps on Android devices and many app developers rely on such native apps. This means that Google's Play Store is an **important access point or gateway** to users for a diverse and large range of businesses. In particular:

- on any given day during a short period in 2022, on average [1.5-2.5] million users download at least one native app through the Play Store on each day in the UK;[42]
- roughly [900,000-1,000,000] app developers had roughly [3-3.5] million apps on the Play Store in the UK in 2021; and
- [✂] of customer billings on apps (including Play Pass) were processed through Google Play's billing system in the UK in 2021.

104. Third, Google's control over access to the Play Store means that it is able to **determine the 'rules of the game'** for app developers seeking to distribute apps on Android, in particular through its development of SDKs and through the Google's app review process (and the ability to reject apps or app updates which do not comply with its rules).

105. Fourth, Google can use its control over app distribution on Android to **extend the market power of the Play Store to gain a competitive advantage in other activities**. In particular, Google is able to confer an advantage on its own apps which do not have to comply with rules such as the payment of a commission to Google. In addition, Google is able to use its position to gain

[40] For the short time period in 2022 for which Google provided data.
[41] We used Bank of England data to convert from US Dollars into Great British Pounds, this was done using the yearly data from XUAAUSS | Bank of England | Database.
[42] For the short time period in 2022 for which Google provided data.

access to confidential information which may assist it in developing apps, services and devices in a way which departs from competition on the merits.

106. In addition, Google's control over the Play Store via its agreements with device manufacturers gives it scope to **further entrench its market power** in native app distribution. In particular, the latest version of Google's revenue sharing agreements allows it to use its position in native app distribution to disincentivise the pre-installation of rival app stores and the usage of alternative distribution channels by manufacturers in a way that rivals cannot counter, given that they do not have the same number of users on their app stores and do not have the scale to match such payments.

Summary of our views in relation to native app distribution

107. In combination, our findings to date and the related evidence support the view that Google's supply of products and services related to the development and distribution of native apps on Android devices would be a 'digital activity'; that Google has substantial and entrenched market power relation to this digital activity; and that Google's position in respect of native app distribution is strategic.

108. Given this, in our view the available evidence indicates Google would **meet the government's currently proposed test for SMS in relation to native app distribution.**

Mobile browsers and browser engines

Relevant 'digital activity'

109. As outlined in Chapter 5, Google has a browser called Chrome and a browser engine called Blink.

110. We consider that there is a specific activity carried out by Google which relates to the supply of mobile browsers and browser engines which covers both Chrome and Blink.

111. **We consider this activity is 'digital'** because the products and services provided are based on digital technologies and facilitate the distribution of digital content, as well as in certain cases software, by content providers to users. The primary use of a browser is to access the web and browse the internet – these activities are widely recognised and understood to be digital in nature.

Substantial and entrenched market power

112. We consider that the evidence identified in this study supports the case that Google has substantial and entrenched market power in the supply of mobile browsers and browser engines. This is based on its shares of supply (including changes over time), evidence on current competition and evidence on barriers to entry and expansion.

113. As shown by the data presented in Chapter 5, Google's Chrome browser has a more than 70% share of supply on Android devices. The next largest browsers are Samsung at 15% and Firefox at 4%. Across operating systems, Chrome's share of supply for mobile browsers amounts to around 40%. This share has been steadily increasing over the last decade, starting at only 2% in 2012.

114. When considering both mobile and desktop devices, Chrome's position is still strong, with Chrome holding a share of almost 50%. Chrome has been the most popular browser on Android for more than 7 years.

115. With respect to browser engines, Google's Blink browser engine has a share of supply in browser engines on Android devices of at least 95%, as most other browsers on Android devices (including Samsung Internet) use Blink. Across mobile operating systems, Blink has a share of just under 50%.

116. Further, based on current evidence we consider that the constraint from other browsers is limited for several reasons and this is unlikely to change:

- First, Google influences user behaviour through pre-installation, default settings and choice architecture. A key part of this is Chrome being pre-installed on most Android devices and often set as the default browser. Pre-installation and default settings are important in determining consumer choice, implying that this constitutes a key barrier for other browsers to acquire users. This is reinforced by Google making it difficult for users to change the default browser.

- Second, the importance of web compatibility limits the extent to which Blink-based browser providers are willing to make adjustments to Blink and hence the extent to which they are able to differentiate themselves from Chrome. It further limits the constraint browsers based on other browser engines pose on Chrome.

117. Based on these findings, we took the view in Chapter 5 that **Google has substantial and entrenched market power in the supply of its mobile browser and browser engine.**

Strategic position

118. We consider that, based on the government's test for Strategic Market Status as proposed in its consultation, **Google's position in the digital activity of browsers and browser engines can be considered 'strategic'** for the following reasons.

119. First, Google has achieved very significant **size and scale.** Chrome accounted for 40% of all web page views on mobile devices in the UK in 2021. When considering all mobile browsers based on Google's Blink browser engine, this figure increases to just under 50%. While Google no longer sets Google Search as the default search engine in Chrome and provides users with a search engine choice screen instead, in almost all cases in which the choice screen was used, Google Search was chosen – resulting in substantial revenues from search advertising for Google through Chrome.

120. Second, other than through app stores, web browsers are the most important way for users of mobile devices to access content and services over the internet. In addition to the important role that browsers play in enabling users to search for and consume content, browsers are one of the key sources of traffic for search engine providers as well as other businesses that want to reach users with their content and products online. Browsers are hence an **important gateway** through which online content can be accessed by and delivered to users.

- The Chrome browser, given its position, is an important access point or gateway to users for a diverse and large range of businesses. This includes both online content providers and, more specifically, search providers.

- Blink, as the browser engine for most browsers on Android devices, further allows Google to impact what functionality is offered and what user data is collected on all Blink-based browsers.

121. Third, Google can use its control of Chrome and Blink to **determine the 'rules of the game'** for digital advertising. In particular, Google can determine what user data can be collected by websites on Chrome. This then influences the effectiveness of digital advertising as well as key aspects of competition in digital advertising – an area in which Google is active as a digital advertising provider. Google can further limit the user data that is collected on other browsers that are based on Blink, limiting the availability of, and thus scope for publishers and advertisers to switch to, browsers that allow for more user data collection.

122. Fourth, Google's control of Blink and its position in browsers gives it scope to **extend Google's market power in the supply of ad inventory and in the supply of ad tech services**. Google can use its control to influence competition in the supply of ad inventory and in the supply of ad tech services, through the deprecation of third-party cookies on its browser and other Blink-based browsers (which Google has proposed to do as part of its Privacy Sandbox proposal) or by restricting the functionality associated with user tracking for third parties, but retaining this functionality for Google.

Summary of our views in relation to mobile browsers and browser engines

123. In combination, our findings to date and the related evidence support the conclusion that Google's mobile browser and browser engine would be a 'digital activity'; that Google has substantial and entrenched market power in relation to this digital activity; and Google's position in respect of mobile browsers and browser engines is 'strategic'.

124. Given this, in our view the available evidence indicates Google would **meet the government's currently proposed test for SMS in relation to mobile browsers and browser engines.**

Assessment on Strategic Market Status for Google

125. The evidence and findings set out in this report, and supporting appendices, indicate that Google would, in our view, meet the criteria for SMS currently suggested in the government's consultation for each of the following activities within its mobile ecosystem: (i) mobile operating systems; (ii) native app distribution; and (iii) mobile browsers and browser engines.

126. As set out in its response to the consultation, the government intends to adopt a minimum revenue threshold in legislation and is considering what the appropriate minimum threshold would be. For the present purposes we are assuming that Google, based on its UK revenues of £[10-15] billion, will meet the threshold determined by the government which will ultimately be a matter for the DMU to establish.