

Appendices

Appendices

A: Terms of reference

B: Conduct of the inquiry

C: Shares of supply tables

D: Our assessment of the evidential value of the CMA Survey

E: Our assessment of the Parties' incentives to foreclose

F: Foreclosure of rival PC operating systems

G: CMA Incentives model

Glossary

Appendix A: Terms of reference

- 1 In exercise of its duty under section 33(1) of the Enterprise Act 2002 (the **Act**) the Competition and Markets Authority (**CMA**) believes that it is or may be the case that:
- (a) arrangements are in progress or in contemplation which, if carried into effect, will result in the creation of a relevant merger situation, in that:
 - (I) enterprises carried on by Microsoft Corporation will cease to be distinct from enterprises carried on by Activision Blizzard, Inc.; and
 - (II) the condition specified in section 23(1)(b) of the Act is satisfied; and
 - (b) the creation of that situation may be expected to result in a substantial lessening of competition within a market or markets in the United Kingdom for goods or services, including in:
 - The manufacture and supply of gaming consoles (together with their digital storefronts);
 - The distribution of games through multi-game subscription services; and
 - The supply of cloud gaming services.
- 2 Therefore, in exercise of its duty under section 33(1) of the Act, the CMA hereby makes a reference to its chair for the constitution of a group under Schedule 4 to the Enterprise and Regulatory Reform Act 2013 in order that the group may investigate and report, within a period ending on 1 March 2023, on the following questions in accordance with section 36(1) of the Act:
- (a) whether arrangements are in progress or in contemplation which, if carried into effect, will result in the creation of a relevant merger situation; and
 - (b) if so, whether the creation of that situation may be expected to result in a substantial lessening of competition within any market or markets in the United Kingdom for goods or services.

Sorcha O'Carroll
Senior Director, Mergers
Competitions and Markets Authority
15 September 2022

Appendix B: Conduct of the Inquiry

- 1 On 15 September 2022, the CMA [referred](#) the anticipated acquisition by Microsoft Corporation (**Microsoft**) of Activision Blizzard, Inc. (**Activision**) (together **the Parties**) for an in-depth phase 2 inquiry.
- 2 We published the biographies of the members of the Inquiry Group conducting the phase 2 inquiry on our inquiry [webpage](#) on 15 September 2022 and the administrative timetable for the inquiry was published on the inquiry [webpage](#) on 4 October 2022. A revised version of the administrative timetable was published on the inquiry webpage on 5 January 2023.
- 3 We invited a wide range of interested parties to comment on the Merger. These included the Parties' competitors and customers. Evidence was obtained from third parties using written requests. A number of them also provided us with information by video conference calls or in-person meetings as well as by responding to supplementary written questions. We additionally considered a large number of submissions received from members of the public via email. Evidence submitted during the CMA's phase 1 investigation has also been considered in phase 2.
- 4 We commissioned DJS Research to conduct a survey on the gaming habits and purchasing behaviour of PlayStation Call of Duty users. A copy of DJS Research's report of the survey methodology and findings, including the questions used, is published on the inquiry [webpage](#) alongside this document.
- 5 We received written evidence from the Parties in the form of submissions and responses to information requests, including a large number of internal documents. A non-confidential version of Microsoft's response to the CMA's phase 1 decision was published on our inquiry [webpage](#) on 18 October 2022.
- 6 On 14 October 2022, the CMA published an [Issues Statement](#) on the inquiry webpage setting out the areas on which it envisaged that the Phase 2 inquiry would focus. Non-confidential versions of Microsoft's and third parties' responses to the issues statement have been published on our inquiry [webpage](#).
- 7 On 17 and 18 October 2022 members of the Inquiry Group, accompanied by CMA staff, attended site visits with the Parties and their advisers.
- 8 We also held separate hearings with each of the Parties on 12 and 13 December 2022.
- 9 Prior to the hearings, we sent the Parties a number of working papers for comment. The Parties were also sent an annotated issues statement, which outlined our emerging thinking to date prior to their respective main party hearings.

The Parties provided comments on our annotated issues statement and working papers on 20 December 2022.

- 10 On 5 January 2023, we published a Notice of Extension setting out the Inquiry Group's decision to extend the reference period of the inquiry and a revised version of the Administrative Timetable. In taking this decision, the Inquiry Group had regard to the scope and complexity of the investigation and the need to consider a large volume of evidence as well as main party and third party submissions, the necessity to allow sufficient time to take full and proper account of comments that will be received in response to the Inquiry Group's provisional findings, and to reach a fully reasoned final decision in the statutory timeframe.
- 11 A non-confidential version of our provisional findings report has been published on the inquiry webpage. As we have provisionally concluded that the Merger constitutes arrangements in progress or contemplation which, if carried into effect, will result in the creation of a relevant merger situation, and that the creation of that situation may be expected to result in a substantial lessening of competition by reference to certain of the markets investigated by the Inquiry Group, a notice of possible remedies has also been published on the inquiry webpage. Interested parties are invited to comment on both of these documents.
- 12 We would like to thank all those who have assisted our inquiry so far.

Appendix C: Shares of supply tables

Introduction

1. This appendix describes the methodology we have used to calculate market shares used in our Provisional Findings. We also report more detailed shares of supply tables.

Shares of supply in console hardware

2. We used data from Microsoft, SIE, and Nintendo to compute shares of supply in console hardware.

Table 1: Shares of console hardware by annual sales value, 2019-2021, worldwide

Company	2019		2020		2021	
	\$bn	%	\$bn	%	\$bn	%
Microsoft	[X]	[10-20]	[X]	[20-30]	[X]	[20-30]
SIE	[X]	[30-40]	[X]	[20-30]	[X]	[30-40]
Nintendo	[X]	[40-50]	[X]	[50-60]	[X]	[40-50]
Total	[X]	100	[X]	100	[X]	100

Source: CMA's calculations on the Parties' and Third Parties' data.

Table 2: Shares of console hardware by annual sales value, 2019-2021, UK

Company	2019		2020		2021	
	\$bn	%	\$bn	%	\$bn	%
Microsoft	[X]	[10-20]	[X]	[20-30]	[X]	[30-40]
SIE	[X]	[40-50]	[X]	[30-40]	[X]	[40-50]
Nintendo	[X]	[40-50]	[X]	[30-40]	[X]	[20-30]
Total	[X]	100	[X]	100	[X]	100

Source: CMA's calculations on the Parties' and Third Parties' data.

Table 3: Shares of console hardware by annual sales volume, 2019-2021, worldwide

Company	2019		2020		2021	
	Units (k)	%	Units (k)	%	Units (k)	%
Microsoft	[X]	[10-20]	[X]	[10-20]	[X]	[10-20]
SIE	[X]	[30-40]	[X]	[20-30]	[X]	[30-40]
Nintendo	[X]	[50-60]	[X]	[60-70]	[X]	[50-60]
Total	[X]	100	[X]	100	[X]	100

Source: CMA's calculations on the Parties' and Third Parties' data.

Table 4: Shares of console hardware by annual sales volume, 2019-2021, UK

Company	2019		2020		2021	
	Units (k)	%	Units (k)	%	Units (k)	%
Microsoft	[X]	[20-30]	[X]	[10-20]	[X]	[20-30]
SIE	[X]	[30-40]	[X]	[20-30]	[X]	[30-40]
Nintendo	[X]	[40-50]	[X]	[50-60]	[X]	[30-40]
Total	[X]	100	[X]	100	[X]	100

Source: CMA's calculations on the Parties' and Third Parties' data.

Table 5: Shares of console yearly active users, 2021, worldwide

Company	2021	
	Units	%
Microsoft	[X]	[30-40]
SIE	[X]	[40-50]
Nintendo	[X]	[10-20]
Total	[X]	100

Source: CMA's calculations on the Parties' and Third Parties' data.

Note: YAU figures include all user types (ie users playing buy-to-play games, users playing free-to-play games, users part of a subscription plan) on all console models.

Table 6: Shares of console installed base, 2021, worldwide

Company	2021	
	Units	%
Microsoft	[X]	[20-30]
SIE	[X]	[40-50]
Nintendo	[X]	[30-40]
Total	[X]	100

Source: CMA's calculations on SIE's data [X]

Note: we computed the installed base as the cumulative number of console units sold over the period 2013-2021.

Shares of supply in console game publishing

- We used data from the Parties and several other game publishers to compute shares of supply in game publishing.

Table 7: Game publishing shares of supply on PlayStation in terms of consumer spend, 2021, worldwide

Company	2021	
	\$m	%
Microsoft	[X]	[0-5]
Activision	[X]	[10-20]
Combined	[X]	[10-20]
SIE	[X]	[5-10]
Take-Two	[X]	[10-20]
Electronic Arts	[X]	[20-30]
Epic Games	[X]	[10-20]
Ubisoft	[X]	[0-5]
Other	[X]	[20-30]
Total	[X]	100

Source: CMA's calculations on SIE's data [X]

Table 8: Game publishing shares of supply on PlayStation in terms of consumer spend, 2021, UK

Company	2021	
	\$m	%
Microsoft	[X]	[0-5]
Activision	[X]	[10-20]
Combined	[X]	[10-20]
SIE	[X]	[0-5]
Take-Two	[X]	[5-10]
Electronic Arts	[X]	[40-50]
Epic Games	[X]	[10-20]
Other	[X]	[20-30]
Total	[X]	100

Source: CMA's calculations on SIE's data [X]

Shares of supply in digital distribution

4. We used data from Microsoft, SIE and Nintendo to compute shares of supply in digital distribution buy-to-play.

Table 9: Shares of console buy-to-play digital distribution in terms of consumer spend, 2019-2021, worldwide

Company	2019		2020		2021	
	\$m	%	\$m	%	\$m	%
Microsoft	[x]	[30-40]	[x]	[20-30]	[x]	[20-30]
SIE	[x]	[50-60]	[x]	[50-60]	[x]	[50-60]
Nintendo	[x]	[10-20]	[x]	[10-20]	[x]	[10-20]
Square Enix	[x]	[0-5]	[x]	[0-5]	[x]	[0-5]
Total	[x]	100	[x]	100	[x]	100

Source: CMA's calculations on the Parties' and Third Parties' data.

Table 10: Shares of console buy-to-play digital distribution in terms of consumer spend, 2019-2021, UK

Company	2019		2020		2021	
	\$m	%	\$m	%	\$m	%
Microsoft	[x]	[40-50]	[x]	[30-40]	[x]	[30-40]
SIE	[x]	[50-60]	[x]	[50-60]	[x]	[50-60]
Nintendo	[x]	[5-10]	[x]	[10-20]	[x]	[5-10]
Square Enix	[x]	[0-5]	[x]	[0-5]	[x]	[0-5]
Total	[x]	100	[x]	100	[x]	100

Source: CMA's calculations on the Parties' and Third Parties' data.

Table 11: Shares of console subscription digital distribution in terms of consumer spend, 2019-2021, worldwide

Company	Service	2019		2020		2021	
		\$m	%	\$m	%	\$m	%
Microsoft	Game Pass Ultimate	[x]	[0-5]	[x]	[10-20]	[x]	[20-30]
	Xbox Live Gold	[x]	[30-40]	[x]	[20-30]	[x]	[10-20]
	Game Pass Console	[x]	[5-10]	[x]	[0-5]	[x]	[0-5]
	Microsoft Total	[x]	[40-50]	[x]	[40-50]	[x]	[40-50]
SIE	PlayStation Now	[x]	[0-5]	[x]	[0-5]	[x]	[0-5]
	PlayStation Plus	[x]	[40-50]	[x]	40-50	[x]	[40-50]
	SIE Total	[x]	[50-60]	[x]	[50-60]	[x]	[40-50]
Nintendo	Nintendo Switch Online	[x]	[0-5]	[x]	[5-10]	[x]	[5-10]
	Nintendo Switch Online + Expansion Pack	[x]	[0-5]	[x]	[0-5]	[x]	[0-5]
	Nintendo Total	[x]	[0-5]	[x]	[5-10]	[x]	[5-10]
Total		[x]	100	[x]	100	[x]	100

Source: CMA's calculations on the Parties' and Third Parties' data.

Table 12: Shares of console subscription digital distribution in terms of consumer spend, 2019-2021, UK

Company	Service	2019		2020		2021	
		\$m	%	\$m	%	\$m	%
Microsoft	Game Pass Ultimate	[x]	[0-5]	[x]	[10-20]	[x]	[20-30]
	Xbox Live Gold	[x]	[40-50]	[x]	[30-40]	[x]	[20-30]
	Game Pass Console	[x]	[10-20]	[x]	[5-10]	[x]	[0-5]
	Microsoft Total	[x]	[50-60]	[x]	[50-60]	[x]	[50-60]
SIE*	PlayStation Now	[x]	[0-5]	[x]	[0-5]	[x]	[0-5]
	PlayStation Plus	[x]	[30-40]	[x]	[30-40]	[x]	[30-40]
	SIE Total	[x]	[40-50]	[x]	[40-50]	[x]	30-40]
Nintendo	Nintendo Switch Online	[x]	[0-5]	[x]	[0-5]	[x]	[5-10]
	Nintendo Switch Online + Expansion Pack	[x]	[0-5]	[x]	[0-5]	[x]	[0-5]
	Nintendo Total	[x]	[0-5]	[x]	[0-5]	[x]	[5-10]
Total		[x]	100	[x]	100	[x]	100

Source: CMA's calculations on the Parties' and Third Parties' data.

*Figures for SIE UK revenues are taken from Microsoft estimates

Shares of supply in cloud gaming services

5. We used data from Microsoft and third party cloud gaming service providers to compute shares of supply in cloud gaming services.

Table 13: Microsoft estimates for shares of cloud gaming services in terms of average MAUs, 2021, worldwide

Service	Average MAUs (m)	%
xCloud	[X]	[0-5]
NVIDIA GFN	[X]	[50-60]
Facebook Gaming	[X]	[10-20]
Google Stadia	[X]	[5-10]
PlayStation Now	[X]	[0-5]
Nintendo Switch Online	[X]	[0-5]
Amazon Luna	[X]	[0-5]
Antstream Arcade	[X]	[0-5]
Total	[X]	100

Source: Microsoft, response to the s109 notice 2 dated 31 October 2022, question 99

Table 14: Shares of cloud gaming services in terms of average MAUs, 2021, worldwide.

Service	Average MAUs	%
xCloud	[X]	[20-30]
PlayStation - Cloud	[X]	[30-40]
NVIDIA GFN	[X]	[20-30]
Google Stadia*	[X]	[5-10]
Total	[X]	100

Source: CMA's calculations on the Parties' and Third Parties' data.

*Figure for March to December 2021

Note: Due to rounding, figures may sum to more than 100%

Table 15: Shares of cloud gaming services in terms of average MAUs, 2022, worldwide.

Service	Average MAUs	%
xCloud*	[X]	[60-70]
NVIDIA GFN†	[X]	[10-20]
PlayStation Cloud Gaming	[X]	[10-20]
Google Stadia‡	[X]	[0-5]
Amazon Luna§	[X]	[0-5]
Total	[X]	100

Source: CMA's calculations on the Parties' and Third Parties' data.

*Figure for January to September 2022.

†Figure for January 2022 only

‡ Figure for January to July 2022.

§ Figure for March (launch date) to September 2022.

6. To calculate the market shares in tables 14 and 15 we first requested data from Microsoft and its cloud gaming competitors on the MAUs for their cloud gaming services for each month in 2021 and 2022 (where available). We then averaged the set of MAUs for 2021 and the set for 2022 respectively to create

figures for the average MAUs for cloud gaming services for the years 2021 and 2022.

7. In constructing our market shares for cloud gaming services, we have done the following:
 - (a) We have seen MAUs (alongside other similar measures such as daily, weekly, and yearly active users) commonly used across the industry to track performance. We consider that average MAUs is a more informative and readily available metric than revenue or total game-time, and therefore used it for our own analysis. For instance, many cloud gaming services are conflated with multi-game subscription services, meaning that it is harder to attribute revenues specifically to the cloud gaming services in this scenario.
 - (b) Nintendo Switch Online has been excluded from our shares as Nintendo's cloud gaming service is very limited. Nintendo's cloud gaming service is only available on the Nintendo Switch device and [REDACTED].¹ Nintendo Switch Online gives gamers access to online play and cloud saving amongst other features.² We therefore see Nintendo Switch Online as predominately an online multiplayer service rather than a cloud gaming service.
 - (c) Facebook Gaming has been excluded from our shares [REDACTED].³ It is a materially different offering to other cloud gaming services such as xCloud or NVIDIA GFN, for example.
8. We note that these shares come with several caveats:
 - (a) Some cloud gaming services—notably Amazon Luna—are not fully launched. Furthermore, other potential providers have not yet entered. For example, [REDACTED]⁴, [REDACTED].
 - (b) xCloud is primarily available through Game Pass Ultimate; however, gamers have also been able to play Fortnite via Xbox Cloud Gaming for free since 5 May 2022. Similarly, Google Stadia and NVIDIA GFN also have free and paid options. Therefore, the figures for NVIDIA and Google's cloud gaming services may overestimate GeForce NOW and Stadia's strength in the cloud gaming market vis-à-vis their ability to monetize their service, and hence may overstate their likely share in the

¹ [REDACTED] response to the CMA's RFI.

² [REDACTED] response to the CMA's RFI.

³ [REDACTED] response to the CMA's RFI.

⁴ [REDACTED] call note.

long run as they may not be able to profitably attract that percentage of the market.

- (c) Many cloud gaming services are contained within multi-game subscription services such as Xbox Game Pass Ultimate or PlayStation Plus Premium. In such cases it is harder to determine how much customers would pay for the cloud gaming services without the multi-game subscription.
- (d) Different cloud gaming services are operated using different business models making direct comparisons difficult. For example, NVIDIA GFN's subscription is a pure cloud gaming offering with no games included (BYOG). In contrast, a service such as Amazon Luna includes a variety of different subscription options, as well as the option for BYOG.
- (e) The cloud gaming service market is nascent —as a result shares may change more rapidly as the market grows than in a mature market.
- (f) The monthly figure for PlayStation Cloud Gaming was constructed by summing the number of subscribers to (any tier of) PlayStation Plus and PlayStation Now who had used SIE's cloud service in that month. This means a cloud gaming user who subscribed to both PlayStation Plus and PlayStation Now was double counted. This only applies to the figures between January 2020 and July 2022 (when PlayStation Now was discontinued). This likely still means that PlayStation Cloud Gaming's share is overestimated in both 2021 and 2022.
- (g) Google Stadia shut down in January 2023.
- (h) Shadow is not included in any shares as we have not received evidence from them on their position in the market. We understand they are a very small player in cloud gaming and hence this does not significantly change the shares. For instance, they are not included in the Parties' cloud gaming shares.
- (i) In our calculation of each cloud gaming service's averages MAUs we have excluded months for which we do not have figures for MAUs. We therefore assume that the MAUs for these months would not be meaningfully different from the average.

Appendix D: Our assessment of the evidential value of the CMA Survey

Introduction

1. We commissioned the independent market research agency DJS Research Ltd [**DJS**]¹ to undertake an online survey of a sample of UK customers of SIE who play CoD on PlayStation.
2. This appendix sets out:
 - (a) our view on the robustness of the CMA Survey: its strengths and limitations;
 - (b) the Parties' submissions on the draft survey questionnaire that we shared with them before fieldwork and our assessment of these; and
 - (c) our overall assessment of the evidential weight we can place on our survey findings.
3. In this introduction we begin by summarising the methodology for the CMA Survey. We then set out some relevant information from the CMA's good practice guide about the value of survey evidence within the context of merger inquiries that underpins how we assess how much weight to give to survey results.
4. DJS conducted an online survey of a sample of SIE's UK customers. Using our legal powers under the Enterprise Act 2002, we required SIE to provide us with a non-identifiable list of PlayStation primary accounts that had been used to play a CoD game between July 2021 and June 2022 together with variables to use in sampling and analysis. We selected a stratified random sample of around 50,000 records from this list, for which SIE was required to provide account holder details (names, dates of birth and e-mail addresses). We passed these records to DJS to form their survey sample. The agency conducted the survey between 31 October and 16 November 2022 and achieved 1,397 completed online interviews, representing a response rate of 4.4%. Further details on the methodology, questionnaire and findings are provided in the DJS survey report.²
5. As set out in our good practice guide, statistically robust customer survey

¹ See DJS website [here](#).

² DJS's Report [here](#)

research can be very important in reaching informed decisions.³ The CMA takes many aspects into account when assessing the evidential weight that can be given to survey results: including the questionnaire quality, the fieldwork quality and method, and the coverage and representativeness of the survey responses.⁴ Of particular relevance here is that:

- (a) The questionnaire should be carefully designed; and assessed to consider how closely it reflects the objectives of the research and how readily participants may be expected to provide meaningful responses.⁵
- (b) Representativeness of the achieved sample, scope for sample bias and non-response bias.⁶
- (c) The CMA is generally cautious about giving full evidential weight to surveys that achieve a response rate below 5% unless there is evidence that the achieved sample is representative of the target population.⁷
- (d) The CMA is cautious about presenting and comparing percentages based on sub-populations for which the achieved (effective) sample size is less than 100. Where included, the CMA's findings based on such sub-populations are likely to be presented qualitatively and assigned only limited evidential weight, in the round.⁸

Our view on the robustness of the CMA Survey: its strengths and limitations

- 6. We address, in turn, the aspects highlighted at (a)-(d) in the previous paragraph:
 - (a) We designed the survey questionnaire carefully, in accordance with generally accepted principles and those highlighted in our good practice guide. We paid particular attention to the ordering of questions/blocks of questions, wording (including in information text), response scales used and to how best to aid respondent's comprehension and recall. Such careful consideration of all these aspects reduces the potential for leading questions, framing, and less meaningful answers and, therefore, survey results that may be biased or difficult to interpret. Additionally, we employed an iterative process for questionnaire design, consulting SIE,

³ [Good practice in the design and presentation of customer survey evidence in merger cases \(good practice guide\)](#), 23 May 2018, paragraph 1.1.

⁴ [Good practice guide](#), paragraph 4.38.

⁵ [Good practice guide](#), paragraph 4.38(d).

⁶ [Good practice guide](#), paragraph 4.38(c).

⁷ [Good practice guide](#), paragraph 4.38(g).

⁸ [Good practice guide](#), paragraph 4.38(h).

the Parties and internal stakeholders as well as drawing on the experience of the market research agency including the results from piloting and cognitive testing of the questionnaire.

Nonetheless, this was a difficult subject to tackle in a merger survey questionnaire with an audience of console gamers, some of whom had played CoD much less frequently or less recently than others and whose past and potential future purchasing behaviours, as a group, included a high level of variability. We also recognise that the hypothetical scenarios we presented to elicit responses were, of necessity, more difficult to design robustly than in many other merger surveys. We are, therefore, cautious in our interpretation of those survey findings that rely on stated behaviours in response to hypothetical scenarios presented to respondents.

- (b) The CMA Survey was able to utilise SIE's UK PlayStation customer list as a sampling frame so it had the strong advantage – over other methods for sourcing sample – of being closely aligned with the population of interest, namely adult gamers in the UK that play CoD on PlayStation more than minimally. Our sample frame – primary accounts used to play CoD between July 2021 to June 2022 for 10 hours or more and/or to have spent at least \$100 in the period – together with the survey screener questions, provide a reasonable proxy for this. We selected a stratified random sample from this customer list to provide to the agency which, in turn, used random sampling when selecting the batches of sample to issue. While DJS report only unweighted survey results, the CMA calculated design weights and conducted sensitivity testing – ie, with and without weights – for our key findings from the survey; we found that the application of these weights did not materially affect our interpretation of the survey results. We address non-response bias under (c) below where it is most pertinent.
- (c) Survey non-response bias occurs when those who respond to a survey and those who do not are systematically different in ways that would be associated with their patterns of replies to questions key to the findings. If such a bias exists, this is one way in which the views and behaviours of the respondent group would not be representative of those of the entire population of interest. While there isn't a direct relationship between the response rate achieved and representativeness, the lower the response rate, the greater the potential for such non-response bias – if uncorrected – to reduce representativeness. The response rate achieved in the CMA Survey was 4.4%. It is difficult to achieve good response levels in online surveys generally and response rates are often as low as 1%. Here, DJS kept the survey as short and engaging as possible, offered an incentive,

and used several email reminders, but we were not able to achieve a response rate of at least 5%, the level discussed in our good practice guide. However, in this case we had gametime information for the entire sampling frame of PlayStation accounts and this enabled us to assess the representativeness of the respondent group in terms of time playing CoD.⁹ We compared those who responded to our survey with the wider sample in terms of time playing CoD and found a good match. Therefore – in terms of considerations around sample bias and in accordance with our good practice guide – we consider we can assign evidential weight to the CMA survey.

(d) In these Provisional Findings we present results only for sub-groups based on achieved sample sizes of at least 100 or, where weighted, effective sample sizes of at least 100. Such findings are sufficiently precise to assign them evidential weight on that basis.

7. We have highlighted above some of the strengths of our survey, along with the challenges and the steps we took to address these and mitigate the limitations that may have been associated with them. We consider that the CMA Survey was designed, conducted and analysed in accordance with survey good practice and as robustly as the circumstances of the merger allowed. We also consider that the results need to be interpreted carefully and with caution, as we have done here when presenting findings based on our survey.

The Parties' submissions on the CMA Survey and our assessment of them

8. We sent the draft survey questionnaire to the Merger Parties¹⁰ and to SIE on 14 October 2022. Both the Parties and SIE provided comments which we considered in advance of piloting the survey and finalising the questionnaire.
9. SIE's response provided minor factual comments and suggestions for the wording of individual questions and/or response options. We considered these and made some changes to wording as a result. We do not discuss SIE's comments or our responses to them further here.
10. The Parties made comments, both overall and on individual questions. We

⁹ We consider that, for this population, it is the time spent on CoD that are the key metrics relevant for consideration of representativeness and analysis rather than demographics such as age and sex. We checked this understanding with SIE in an early data meeting.

¹⁰ We use the term 'Merger Parties' in this instance to refer to Microsoft and Activision to distinguish from SIE, a third party in this inquiry. However, generally, we just refer to 'the Parties' in this appendix, meaning Microsoft and Activision.

summarise and address the substantive ones here, in turn:

- (a) The Parties submitted that the timing of the survey coincided with the launch of CoD: Modern Warfare II. The Parties said that there would be extensive marketing by Activision and SIE/PlayStation around the launch date as well as advertising across a range of channels. They submitted that this would be likely to artificially increase the relative importance that gamers (and therefore survey respondents) assign to CoD, biasing the results.

In response, we acknowledge that our survey coincided with a period of heightened advertising around the launch of CoD: Modern Warfare II. This was unavoidable given the time constraints of our inquiry. However, while we agree that this marketing and advertising activity around the time of the CMA Survey will have drawn attention to CoD in the minds of many gamers, we do not consider that this will have resulted in our findings being biased to a material extent. In our questionnaire, we avoided drawing attention to CoD (in isolation) early in the survey, instead asking about console ownership, choice and use first. Additionally, we requested that SIE should not engage in marketing activity with their customers who were in our sample during the fieldwork period for the CMA Survey. More generally, given the frequency of Call of Duty releases, a situation in which an instalment of Call of Duty is forthcoming is not entirely unrepresentative, and the level of marketing activity would, post-Merger, be within the gift of the Merged Entity (and so could be moderated to be consistent with any strategy under consideration).

- (b) The Parties submitted that the hypothetical scenarios focus on circumstances around CoD on PlayStation changing (not any other games or platforms) and so results will present a one-dimensional view. They submitted that questions should also be asked for other popular franchises to contextualise replies regarding CoD.

In response, we disagree that asking about CoD only is an issue. We consider that consideration of games wider than Activision's games would not be relevant to our research objectives. Asking further questions about withholding other games (or otherwise degrading the offering) would have lengthened the questionnaire which would have been likely to have reduced the response rate and quality. The responses to withholding CoD can be interpreted in absolute terms, without reference to other games.

- (c) The Parties submitted that respondents are asked about hypothetical scenarios far out into the future which may provide a biased view of actual likely behaviour; particularly for questions where the timeframe being

considered is heterogeneous across respondents.

In response, we refer to several considerations around the hypothetical scenarios, as follow:

- (i) We are aware that there are well-documented limitations associated with the use and interpretation of hypothetical scenarios and stated preference-type questions in general. But, we consider that, when used and interpreted carefully, they can still be informative and the findings may be given weight. The CMA is experienced in the use of hypothetical scenarios in merger surveys and often gives evidential weight to the findings (where our overall assessment of the survey in question supports this). In the CMA Survey used here, we considered what would be expected to be meaningful to respondents, elicit results that are as reliable as possible and provide useful evidence. As part of this process, we engaged with the experienced researchers at DJS using an iterative process that included piloting and testing the questions with a small number from our sample of PlayStation users.
- (ii) We agree with the Parties' submissions on the issues with hypothetical scenarios far ahead in the future and where the timeframe concerned differs across respondents. However, when we received the Parties' comments, we had already dropped the suite of questions on future console purchase to which they refer (retaining only the backward-looking scenarios that don't suffer from the first of the specific limitations the Parties' highlighted: that of the scenarios being far out into the future).
- (iii) We had also added two hypothetical questions – Q20 and Q21; not seen by the Parties at the time they made their submissions – that are forward-looking but only to the point in time where a respondent is considering buying CoD games to be released in the near future. As a new CoD game is typically released every year, and the question was asked only of those respondents likely to buy future CoD game releases, this scenario represents a closer future event than a console/device purchase and may be more easily imagined, thus eliciting a response that is more likely to be reliable.
- (iv) We agree with the Parties' second point that the timeframe associated with the hypothetical situations presented will be heterogenous across respondents. However, we do not consider that this will have been likely to have biased the findings in a particular direction (if at all).

- (d) The Parties submitted that respondents are asked about hypothetical device purchase decisions without any information on the prices of different devices. The Parties recommended that information on the cost of devices should be included in these questions – especially for devices yet to be released.

In response, we disagree that price should be explicitly included (or sought) in the questions concerning specific consoles and other devices. For the questions that look back to a respondent's most recent PlayStation purchase, we expect that most gamers will have at least a rough idea of the relative prices of the main consoles and gaming PCs available at the time and that this will have been considered – alongside other factors – in selecting response options. To highlight price, alone, would give it more prominence than other factors relevant to decision-making. The Parties' recommendation about including (and/or seeking) information on price is made particularly in relation to future-based questions where the respondent is required to think about devices yet to be released. While we note that it would be impossible to include prices for such devices, this point is now largely redundant due to our removal of the set of hypothetical questions that asked respondents about likely future behaviours in the scenarios around replacing their current PlayStation.

- (e) The Parties submitted that there are no questions to inform the *value* of CoD gamers who indicate they would be likely to switch away.

In response: we did not need to ask questions about spend to inform the value of CoD gamers to SIE as we have information in the sample provided on customer' spend over a period of a year on console games and game-related content, both generally and on CoD specifically. We consider this sample data provides more metrics on spend and on gameplay – for survey design, weighting and analytical purposes – than could feasibly have been obtained via the questionnaire; and much more reliably.

- (f) The Parties submitted that the introduction to the questionnaire, by mentioning the criteria to qualify and receive the incentive, is leading and may influence responses to later questions. The Parties submitted that it should be more generic.

In response: the survey introduction seen by the Parties was a very early and incomplete draft that was subsequently changed and added to in several respects. In particular, while we did want to refer to gaming – and the final version mentioned 'PlayStation video gaming preferences and

behaviours’ – we removed the reference to ‘one game in particular (which will become apparent during the survey)’ and the requirements for participation (that is, being at least 18 years old and a primary PlayStation account holder) that we agree were unhelpful and unnecessary (as these criteria were largely determined by the scope of our sample and the very small proportion of those who entered the survey and identified as being under 18 were then excluded at the screening section. Specifically, we were careful not to mention the merger inquiry at all and only to mention CoD when the questions related to it specifically or within a randomised list of response options that included other games as well.

11. As noted above, the Parties also made drafting comments and submissions on individual questions which we carefully considered within our wider questionnaire review and development. While we made drafting changes to the questionnaire because of the Parties’ comments, some of their more substantive comments are either already addressed above or are no longer applicable as we had already changed or removed certain questions from the early draft in response to our own emerging thinking.

Our overall assessment of the CMA Survey

12. We have discussed the robustness of the CMA Survey against the key considerations detailed in our survey good practice guide, and we have responded to the Parties’ substantive submissions on our draft questionnaire. Taking all this into account, overall, we are of the provisional view that the CMA Survey has been designed, conducted and analysed robustly in accordance with survey good practice, with some acknowledged limitations. We consider that, when the results are interpreted cautiously, its findings may be assigned qualified evidential weight in our inquiry, especially where it is congruent with other evidence.

Appendix E: Our assessment of the Parties' incentives to foreclose

1. In this appendix, we describe more in detail the quantitative analyses related to the Merged Entity's incentive to foreclose. This is part of a larger evidence base on the Parties' incentive to foreclose described in Chapter 7. First, we discuss the Parties' submissions. Second, we summarise SIE's submissions. Third, we present the analyses we carried out.

Microsoft's financial modelling

Introduction

2. Microsoft submitted a quantitative analysis with the aim of estimating how many PlayStation users would have to buy an Xbox for a foreclosure strategy to be profitable for the Merged Entity.¹ Based on this analysis, the Parties state that at least [X]% of current CoD players on PlayStation [X] would need to purchase an Xbox console to offset the loss of revenues resulting from withholding CoD from PlayStation. The Parties submitted that this figure was 'implausibly high'.²
3. The rest of the section is structured as follows: we first present the methodology used in the Parties' financial modelling; then, we discuss the main factors the Parties considered in their model as well as the main limitations we identified.

Methodology

4. The Parties' model forecasts the benefits and costs of withholding CoD from PlayStation over the period [X]. [X].³
5. In response to the Merged Entity's potential input foreclosure, the Parties' model identifies the following options available to a CoD gamer on PlayStation:
 - (a) Remain on PlayStation and stop playing new CoD releases;
 - (b) Switch to an Xbox or a PC to continue playing CoD.⁴

¹ Parties submission to the CMA; Parties Internal Document; and Microsoft, response to the CMA's s109 notice.

² Parties submission to the CMA.

³ Parties submission to the CMA.

⁴ Parties submission to the CMA.

6. As regards the second option, the Parties' model takes into account also the following:
- (a) Multi-homing: some PlayStation gamers already own an Xbox or a PC for gaming (multi-homers) to which they can switch in case CoD is withheld from PlayStation;
 - (b) Buy-to-play or subscription options: when switching to an Xbox or PC they already own, CoD players can choose between purchasing CoD as a standalone game (buy-to-play option) and playing CoD on Xbox's subscription service, Game Pass (subscription option).⁵
7. Given the above framework, the Parties' model estimated the potential gains and losses that the Merged Entity would incur in case of input foreclosure. Specifically:
- (a) The Parties' gains would be based on the revenues from those gamers choosing to (i) continue playing CoD either on a PC or an Xbox already owned or (i) buy and switch to a new Xbox;
 - (b) The Parties' losses would be based on the foregone revenues generated by those gamers on PlayStation who will not be able to play future CoD releases, as well as those gamers who would have continued playing CoD on PlayStation had it not been withheld by Microsoft.⁶
8. As regards the revenues foregone and recouped, the Parties considered the lifetime values (LTVs) of a CoD gamer on PlayStation, a new Xbox user and a Game Pass user. Specifically:
- (a) The model considered [REDACTED];⁷
 - (b) As regards the LTV of a new Xbox gamer, Microsoft estimated that a [REDACTED]. The Parties then applied to this figure a decaying trend based on the [REDACTED].⁸
 - (c) The Parties also estimated the LTV of a new Game Pass user. Specifically, the Parties used [REDACTED].⁹ [REDACTED]. However, the Parties adjusted this figure downwards to account for [REDACTED].¹⁰

⁵ Parties submission to the CMA.

⁶ Parties submission to the CMA.

⁷ Parties submission to the CMA.

⁸ Parties submission to the CMA.

⁹ Parties explain that they used revenues rather than margins to conservatively inflate the value of a Game Pass subscriber.

¹⁰ Parties submission to the CMA.

9. The Parties estimated that, for the Merged Entity to break even, at least [X]% of current CoD players on PlayStation would need to purchase an Xbox console.¹¹
10. The Parties' model is based on the following:
 - (a) The Parties assumed that CoD gamers on PlayStation that choose to retain access to future CoD releases would [X].¹² [X];¹³
 - (b) In order to account for the presence of multi-homers (ie PlayStation gamers owning also an Xbox and/or a PC for gaming), the Parties estimated the percentages of multi-homers by [X]. The Parties also assumed that all multi-owners would [X];¹⁴
 - (c) The Parties assumed that [X]% of PlayStation gamers would stop playing CoD altogether in case it was withheld from PlayStation;¹⁵
 - (d) In order to estimate how gamers switching away from PlayStation would distribute between buy-to-play and subscription options, the Parties apply their estimate of the [X].¹⁶
11. Based on this, the Parties estimated a critical diversion ratio of [X]%. In other words, in order for the Merged Entity to break even by withholding CoD from PlayStation, the Parties reported that at least [X]% of CoD gamers on PlayStation would need to purchase an Xbox console.¹⁷
12. In addition, the Parties carried out the following sensitivities in order to see what would happen in the various scenarios if they relaxed some assumptions. We discussed some of these sensitivities in Chapter 7:
 - (a) The Parties considered a case in which gamers would not switch to PC but only to Xbox. In this scenario, the diversion ratio would increase to [X]%.¹⁸
 - (b) In the second sensitivity, the Parties considered that even if gamers already own an Xbox, they may not necessarily start playing CoD on Xbox. In this case, the critical diversion ratio would increase to [X]%.¹⁸

¹¹ Parties submission to the CMA.

¹² Microsoft response to working papers.

¹³ Parties submission to the CMA.

¹⁴ Parties submission to the CMA.

¹⁵ Parties submission to the CMA.

¹⁶ Parties submission to the CMA.

¹⁷ Parties submission to the CMA.

¹⁸ Parties' submission to the CMA.

- (c) In the third sensitivity, the Parties considered a higher recoupment on buy-to-play relative to Game Pass. The Parties argued that the reason behind this could be that PlayStation CoD gamers who already own an Xbox and purchase CoD on a B2P basis on Xbox as a result of the withholding strategy could increase their engagement with Xbox and increase their spend on the platform.¹⁹ They showed that a higher LTV on buy-to-play leads to lower critical diversion ratios: specifically, the Parties estimated that if the LTV for multi-homers who play on Xbox via B2P increased by [X]%, the critical diversion ratio would decrease to [X]%.²⁰
- (d) In the fourth sensitivity, the Parties explored the scenario in which the LTVs of new Xbox gamers is lower than the one in the baseline scenario. The Parties argued that some gamers may not fully engage with the Xbox they purchased because they would use it solely for the purpose of playing future CoD releases.²¹ In this case, they found that the revenues the Parties would recoup are lower because the LTV would decrease by [X], equivalent to [X]% of the foregone CoD LTV.²²
- (e) Finally, in the fifth sensitivity the Parties consider a lower LTV of a new Game Pass subscriber to account for [X]. In this case, the critical diversion ratio would increase to [X]%.²³

Parties' analysis presented at the CMA's site visit

Introduction

13. During the CMA's site visit on 17th October, Microsoft presented an alternative input foreclosure incentive analysis.²⁴ Microsoft said it puts more weight on the financial modelling presented above than on this simplified analysis presented at the CMA's site visit, as the version presented at the site visit was a "proof of concept" simple version that was a simplification of, and not an improvement upon, the model above.²⁵
14. Based on this model, Microsoft estimated that [X]% of CoD gamers on PlayStation would need to buy an extra Xbox for the strategy of withholding CoD from PlayStation to be worthwhile for the Merged Entity.²⁵

¹⁹ Parties submission to the CMA.

²⁰ Parties submission to the CMA.

²¹ Parties submission to the CMA.

²² Parties' submission to the CMA.

²³ Microsoft site visit presentation.

²⁴ Microsoft response to working papers.

²⁵ [X].

Methodology

15. In this analysis, Microsoft first computes the loss the Merged Entity would incur by foreclosing CoD on PlayStation. [REDACTED].²⁶
16. Second, Microsoft computes the gains from the strategy: they estimate the [REDACTED]. They do so by taking the ratio of the [REDACTED].
17. By taking the ratio between [REDACTED] of the number of PlayStation owners who play at least one online match of CoD a month, Microsoft estimates that [REDACTED]%²⁷ of CoD gamers on PlayStation would need to buy an extra Xbox for the foreclosure strategy to be financially worthwhile to the Merged Entity.

SIE's Incentives Analysis

Introduction

18. SIE submitted a quantitative analysis which estimated how many PlayStation users would have to buy an Xbox for the strategy of withholding CoD from PlayStation to be profitable for the Merged Entity.²⁸ SIE stated that if over [REDACTED]% of current PlayStation users switched to an Xbox console, the Merged Entity would profit from withholding CoD from PlayStation.²⁹ Then, based on users' engagement level with CoD, SIE presented four scenarios of possible switching rates of PlayStation users to Xbox, and stated that all estimated switching rates were greater than [REDACTED]%.³⁰
19. In the following paragraphs we present the data and the methodology used by SIE in its analysis.

Methodology

20. In the event of the Parties withholding CoD from PlayStation, SIE modelled the following options available to a CoD gamer on PlayStation:
 - (a) Remain on PlayStation and stop playing new CoD releases,
 - (b) Switch to a new Xbox to continue playing CoD.
21. SIE's analysis therefore does not model multi-homing. The possibility of users switching to an existing Xbox console or PC (or purchasing a PC) is not

²⁶ Microsoft site visit presentation.

²⁷ [REDACTED].

²⁸ SIE submission to the CMA.

²⁹ SIE submission to the CMA.

³⁰ SIE submission to the CMA.

estimated. All users that switch are assumed to purchase a new Xbox console.

22. Given the above framework, SIE's model estimates the potential gains and losses that the Parties would incur in the case of input foreclosure. Specifically:
- (a) The Parties' gains are based on the margins earned from gamers that purchase a new Xbox and the associated spending on peripherals, games and subscriptions.
 - (b) The Parties' losses arise from the foregone profits from no longer being able to sell CoD titles on PlayStation.
23. SIE estimated that for the Parties to break even from a foreclosure strategy, [X] % of current PlayStation users would need to switch and purchase a new Xbox console.³¹ We note that this equates to approximately [X] % of CoD users on PlayStation.
24. The main assumptions underlying SIE's model are the following:
- (a) SIE applied a third-party margin of [X] % for CoD sales on PlayStation. SIE currently receives a margin of [X] % on CoD sales on PlayStation. SIE stated that it did not believe that the current discounted margin would remain post-merger, given their main competitor will control ABK's content.³² SIE carried out a sensitivity analysis in which it assumed SIE receives a margin of [X] % on CoD sales.³³ It estimated that the critical switching rate at which it becomes profitable for the Merged Entity to foreclose SIE increases from [X] % to [X] %.
 - (b) SIE increased overall user platform spend by [X] % to account for additional spending that they believe XGP generates.³⁴ Removing the uplift in spending for XGP increases the critical switching rate at which it becomes profitable to withhold CoD from [X] % to [X] %.
25. Employing the assumption that the probability of a user switching is equal to their engagement level with CoD, SIE predicts that [X] % of PlayStation users will switch to Xbox. In a sensitivity analysis, SIE varied the switching rate in each engagement level and predict three alternative scenarios, with switching rates of [X] %, [X] % and [X] % respectively.³⁵ All four of these switching

³¹ SIE submission to the CMA.

³² SIE response to the CMA's RFI.

³³ SIE Internal Document.

³⁴ SIE submission to the CMA.

³⁵ SIE submission to the CMA.

rates are greater than [X]%, the estimated level at which it becomes profitable to withhold CoD from PlayStation. SIE explained the assumption that a user's switching probability is equal to their engagement level is intuitive and likely to be very conservative, given that CoD commands a uniquely loyal following and is therefore likely to drive even higher switching than its engagement rate on a given platform would suggest.³⁶ SIE also submitted an additional analysis based on survey data of PlayStation users that suggested a switching rate of [X]% if CoD were to become exclusive on Xbox.³⁷

CMA's Incentives Analysis

Introduction

26. Having considered the Parties and SIE's incentives analyses, we undertook our own analysis. We developed two separate models:
 - (a) First, we use 2021 data from Activision and SIE as well as our survey results to estimate the total gains and losses made through a potential strategy of withholding CoD from PlayStation. We allow for multi-homing, switching to PC, and distinguish between sales of other first- and third-party games as well as subscription spend.
 - (b) Second, we use the LTVs submitted by the Parties and our survey results to compute gains and losses of a potential total foreclosure strategy. We allow for switching to PC.
27. All the above analyses are based on data from both the Parties and SIE, and they are supplemented by evidence from our own survey.
28. In the rest of this section, we summarise the above analyses, and, for each of them, we describe the underlying methodology, assumptions, data, and results as well as the main limitations.

CMA's incentives analysis based on revenue streams

Introduction

29. In this analysis, we focus on 2021 data because it is the most recent year for which we have granular data broken down by revenue streams. We allow for

³⁶ SIE response to the CMA's RFI.

³⁷ SIE submission to the CMA.

multi-homing because it is a relevant feature in the gaming market, and it affects the Parties' foreclosure incentives. We also allow for switching to PC.

30. We consider three separate purchase choices gamers would face when buying a new gaming platform in case CoD were withheld from PlayStation:
 - (i) which gaming platform to buy;
 - (ii) whether to continue play CoD, and if so, which gaming platform to use for CoD playing;
 - (iii) which gaming platform to use for non-CoD games.
31. Moreover, we use two types of 'diversion questions':
 - (a) Historical console purchase: we consider what gamers would have done last time they bought a PlayStation if CoD had been available on Xbox and PC, but not on PlayStation.
 - (b) Partial foreclosure: we consider what gamers would have done last time they bought a PlayStation console if CoD had been available on PlayStation, but some of its features (eg levels, maps, gameplay modes) had not.

Methodology

32. Our baseline model is a full foreclosure scenario in which CoD would not be available on PlayStation, but it would be available on Xbox and PC. In this scenario and in line with the Parties' model, we identify the following options available to a CoD gamer on PlayStation:
 - (a) Remain on PlayStation and stop playing new CoD releases;
 - (b) Switch to an Xbox or a PC to continue playing CoD; and
 - (c) Not buy any console.
33. Given the above framework, our model estimates the potential gains and losses that the Merged Entity would incur in case of input foreclosure. Specifically:

- (a) Parties' losses: by withholding CoD from PlayStation, the Merged Entity would forgo profits made on the sales of CoD on PlayStation.³⁸
- (b) Parties' gains: we consider different channels through which the Merged Entity can benefit from a foreclosure strategy:
 - (i) *Buying a new Xbox*: PlayStation CoD gamers may decide to switch to Xbox and, unless they already own one, they would need to buy it.
 - (ii) *Moving CoD gaming to Xbox or PC*: PlayStation CoD gamers may decide to switch to Xbox or PC to play CoD.
 - (iii) *Moving non-CoD gaming to Xbox or PC*: PlayStation CoD gamers may start playing more Microsoft's first party games and third party games on Xbox or PC.
 - (iv) *Moving subscription spending to Xbox or PC*: PlayStation CoD gamers may move their subscription from PlayStation to Xbox or PC.

Our use of survey data

- 34. To estimate the above gains and losses, we combine our survey results with data that we received from Microsoft, Activision, and SIE on revenues, profits, and number of users.
- 35. When using survey data, we have different options available. When talking about 'respondents' we use unweighted results, meaning that all respondents are given the same weight when computing summary statistics. However, some respondents may play longer or spend more than others. To account for this, we weight the results by the proportion of time or spend the respondents spent on CoD.
- 36. Also, it is standard practice to 'impute' responses to survey questions that said 'don't know'. Specifically, the process of imputation implies inferring the likely response to a given survey question to which a respondent answered 'don't know' based on the responses given to related questions. The key reason behind this practice is that unimputed results provide an underestimate of the statistics at issue, eg diversion ratios, and imputation corrects for this underestimation.
- 37. In our baseline model, we used imputed gametime-weighted and imputed revenue-weighted statistics based on the survey data because we recognise

³⁸ CMA's calculations. This figure is based on the sum of Activision's revenues from upfront sales and add-ons sales on PlayStation in 2021.

that not all the gamers in our sample are the same in terms of their value to Microsoft, and we thus gave more weight to those gamers who play and spend more on CoD. However, we have also performed sensitivity checks with unweighted data to test our results.

38. Our survey uses a sample of CoD gamers on PlayStation that spend at least 10 hours playing CoD or spent at least \$100 over the period June 2021-June 2022. To account for the behaviour of those CoD gamers that do not fall within our sample, we use two extreme assumptions: (i) non-surveyed CoD gamers do not switch at all, and (ii) non-surveyed CoD gamers switch as much as sampled CoD gamers.

Gains from buying a new Xbox

39. We use our own survey results to estimate the proportion of PlayStation CoD gamers that would switch to and buy a new Xbox. Specifically, our survey identifies PlayStation CoD gamers that would have bought a new Xbox in case of foreclosure, either instead or in addition to their PlayStation.
40. Based on this, we computed the estimated number of gamers that would need to buy an Xbox console based on the number of PlayStation consoles that were sold globally in 2021. Since our survey sampled only a portion of PlayStation users, we adjusted our estimated switching rate to account for the proportion of surveyed PlayStation CoD gamers.
41. In order to compute the profits that Microsoft would gain on sales of additional Xbox consoles, we use data on the prices of Xbox consoles in the UK and Microsoft's data on revenues and margins. With regard to this, we take into consideration the fact [X] profit margin for each sale of Xbox console we estimated based on Microsoft's financial data.³⁹ Also, since we recognise that sales on consoles are one-off, we spread them over the entire length of the console cycle [X].

Gains from gamers moving CoD playing to Xbox or PC

42. We estimate the profits made by the Parties on additional buy-to-play sales of CoD on Xbox consoles and PC based on our survey results. Specifically, our survey identifies PlayStation CoD gamers that would have played CoD on the new device on either a new Xbox or a new PC in case of foreclosure.
43. In order to estimate additional profits made on B2P sales of CoD on Xbox, we multiply the proportion of gamers diverting their CoD gaming to Xbox (as

³⁹ This is the overall profit margin of both consoles and accessories, ie total hardware.

estimated by our survey) by CoD's revenues on PlayStation in 2021. To this, we add the revenue-share on CoD charged by Microsoft on the Xbox store. In doing this, we take into account of the profit margins made by Microsoft and Xbox on each of these sales.

44. The methodology is similar for B2P sales on PC, with key differences in the inputs used: survey results, profit margins, and revenue-share data are PC-specific. Assuming that CoD would be available only on the Parties' PC storefronts (which reflects the situation in 2021 when CoD was not available on Steam), we apply a share of CoD sales on PC equal to 100%.

Gains from gamers moving non-CoD games and subscription spending to Xbox or PC

45. Spend on games other than CoD includes:
 - (a) revenue-share on third party titles and add-ons bought on Xbox console,
 - (b) revenue-share on third party titles and add-ons bought on the Parties' PC storefront,
 - (c) first party titles and add-ons on Xbox and PC,
 - (d) subscription on Xbox and PC.
46. We estimate the Parties' profits from the diverted spend of PlayStation CoD gamers on non-CoD games based on our survey results and 2021 data from SIE and Microsoft. Specifically, our survey identifies PlayStation CoD gamers that would have bought a new Xbox or PC either instead of or in addition to PlayStation. Then,
 - (a) For those that buy an Xbox or PC instead of PlayStation, we assume that these gamers would have moved their non-CoD games spending to their new gaming device unless they have an older PlayStation console on which they can still play.
 - (b) To those that buy an Xbox or PC in addition to PlayStation, our survey asked what they would do with their non-CoD games. We use these responses to estimate how much spend on non-CoD games would switch from PlayStation to Xbox or PC.
47. For the estimation of total diverted subscription spend, we use SIE's data on total subscription spend and assume the following:

- (a) If someone buys an Xbox or PC instead of PS, they switch their subscription spend too because a subscription is necessary to play CoD on multi-player.
- (b) Also, we assume that if someone buys an Xbox or PC in addition to PS, they split their subscription evenly.

Parties' views

- 48. In their response to the CMA's Working Papers, the Parties provided some views on our analysis.⁴⁰ Where appropriate, we have incorporated their suggestions in our modelling.
- 49. Specifically,
 - (a) The Parties suggested that our survey is affected by biases in sampling and framing the questions. Specifically, the Parties argued that our survey was focused on the most dedicated CoD gamers. The Parties said that this implied that we cannot assume that the derived diversions hold more generally for all the PlayStation CoD gamers and that the actual diversion are likely to be smaller than what we estimated.⁴¹ We have addressed this by modelling two extreme scenarios where non-surveyed CoD gamers either switch as much as surveyed CoD gamers or do not switch at all.
 - (b) The Parties stated that our assumption that the Parties incur zero costs on additional game sales is not correct. In support of this, they mention that [REDACTED].⁴² We have corrected for this by accounting for the Parties' profit margins on the different channels.
 - (c) Also, the Parties disagree with our assumption that all incremental sales of PC games would be via the Parties' own storefronts where the full game price accrues to the Parties. They suggest that [REDACTED].⁴³ Our assumption reflects the situation in 2021, where CoD was not available through Steam, but only on Battle.net.⁴⁴
 - (d) Finally, the Parties submitted that our assumption that PlayStation CoD gamers who would have bought a new Xbox or PC to play CoD would have moved their subscription spending in full to the new device because it would be necessary to pay for a subscription in order to play CoD on

⁴⁰ Microsoft response to working papers.

⁴¹ Microsoft response to working papers.

⁴² Microsoft response to working papers.

⁴³ Microsoft response to working papers.

⁴⁴ Accounting for Steam's share of supply in overall publishing on PC (which might not reflect its share of supply of CoD) would lower the gains on PC by \$[REDACTED] million.

multi-player is not correct. The Parties say that no subscription is needed in order to play CoD Warzone on any device, to play CoD on PC or to play the single player mode on any CoD.⁴⁵ Even accounting for Warzone, PC and single player mode, we consider there will be some subscription spend that diverts to Xbox. Moreover, we considered that reaching such a level of specificity in modelling consumer behaviour would be seeking to reach a spurious level of accuracy.

- (e) Also, the Parties observe that [X].⁴⁶ However, we used the Parties' submissions to derive the profit margin on hardware and peripherals.⁴⁷

Results

50. Our baseline model uses imputed gametime- and revenue-weighted survey results in order to estimate the direct switching gains and losses. The results do not account for any unquantifiable strategic benefits and losses. The results show that:
- (a) For gametime-weighted survey results:
- (i) If we assume non-surveyed CoD gamers switch as much as surveyed CoD gamers, foreclosure will imply a net gain of \$[X] million for the Merged Entity.
 - (ii) If we assume non-surveyed CoD gamers do not switch at all, foreclosure will imply a net loss of \$[X] million for the Merged Entity.
- (b) For revenue-weighted survey results:
- (i) If we assume non-surveyed CoD gamers switch as much as surveyed CoD gamers, foreclosure will imply a net loss of \$[X] million for the Merged Entity.
 - (ii) If we assume non-surveyed CoD gamers do not switch at all, foreclosure will imply a net loss of \$[X] million for the Merged Entity.
51. We have also performed the following sensitivities. The results are summarised in the table below.
- (a) *Imputed unweighted estimates*: survey results are based on unweighted responses, meaning that we gave the same weight to each respondent.

⁴⁵ Microsoft response to working papers.

⁴⁶ Microsoft response to working papers. [X].

⁴⁷ CMA analysis of: Microsoft Internal Document.

- (b) *Gametime-weighted estimates +/-1%*: we recognise the uncertainty of our survey results and increased and decreased the imputed gametime-weighted statistics of all diversion ratios used in our baseline model by 1%.
- (c) *Spend-weighted estimates +/-1%*: we increased and decreased the imputed gametime-weighted statistics of all diversion ratios used in our baseline model by 1%.

Table 1: Summary table of the sensitivity checks performed on the Parties' estimated gains and losses (in USD million) under full foreclosure of CoD on PlayStation

	<i>Imputed unweighted</i>	<i>Gametime-weighted estimates +1%</i>	<i>Gametime-weighted estimates -1%</i>	<i>Spend-weighted estimates +1%</i>	<i>Spend-weighted estimates -1%</i>
Assuming non-surveyed CoD gamers switch as much as surveyed CoD gamers	-[€]	+ [€]	- [€]	- [€]	- [€]
Assuming non-surveyed CoD gamers do not switch at all	-[€]	+ [€]	- [€]	- [€]	- [€]

Source: CMA's survey.

Limitations

52. Our analysis does not capture any of the strategic benefits and losses of a foreclosure strategy. Just like all other analyses considered in this Appendix, our analysis does not account for strategic and non-quantifiable gains and losses that might, nonetheless, be important to the incentives of the Merged Entity.
53. The MAGs provide that "Particularly in complex and dynamic markets, firms may not focus on short term margins but may pursue other objectives to maximise their long-run profitability... This may include eliminating a possible long-term threat, increasing the stickiness of existing customers, positioning themselves strongly in high-growth markets, gaining customers to obtain direct or indirect network effects, obtaining access to customer data or enabling cross-selling within a broader ecosystem."⁴⁸
54. Second, our analysis is based on 2021 data.
- (a) This means that our results should be interpreted as the annual gains/losses made by the Merged Entity as a result of the foreclosure.
- (b) Also, we adjusted gains for additional sales of Xbox consoles to reflect the multi-year lifetime of the device – ie if a switch to Xbox is sold this year, a

⁴⁸ CMA 129, March 2021, paragraph 7.19(e).

one-off loss is made on that console in order to push game sales for several years. We have assumed that both losses and gains occur at the same time and for the same length of time (seven years), which we recognise is a simplification.⁴⁹ We are also not accounting for switching to occur unevenly over time.

- (c) 2021 may not be representative of future market evolution. For example, gains could be higher if foreclosure occurs at the year of a console release, when several gamers choose their console for the next seven years. We still prefer this approach to using sales forecasts because they would be subject to an even higher degree of uncertainty.
- (d) Also, 2021 reflects that year's performance of CoD, whereas our focus is CoD long-run performance. Taking any year before 2020 would have decreased the losses and gains from foreclosure, whereas focusing on 2020 would have increased the losses and gains.

- 55. Another caveat we consider is the fact that we apply our survey estimates, which are based on a UK sample, to global revenue figures from the Parties and SIE. Moreover, our survey is based on a representative sample of ~1,000 customers – we discuss the reliability of the survey estimates in Appendix D and we used sensitivities to account for this uncertainty.
- 56. Given these limitations and uncertainty, it is important to note that our main aim is not to compute the exact financial incentives of the Merged Entity. Rather, this analysis aims at comparing the order magnitudes of the difference between gains and losses from a foreclosure strategy.

CMA's incentives analysis based on LTVs

Introduction

- 57. In addition to our analysis based on 2021 revenue-streams, we explored a separate alternative approach to assess the Parties' incentives to foreclose based on LTV estimates provided by the Parties.
- 58. We use the Parties' submitted LTVs and our survey results to compute gains and losses of a potential total foreclosure strategy. We allow for switching to PC, and consider multi-homing to be already accounted for in the value of the LTV estimates used.

⁴⁹ Console sales are loss-making when taken in isolation from the follow-on sales of games.

59. The main reason we also considered this approach is that the value of PlayStation CoD gamers switching to Xbox would reflect ordinary course of business valuations rather than estimates of spend based on current spend on PlayStation (and an approximation based on a proportion of that spend being transferred over to Xbox).

Methodology and assumptions

60. We use the Parties' submitted LTVs and our survey results to compute gains and losses of a potential total foreclosure strategy.
61. LTVs are [X].⁵⁰ We use two types of LTVs in our analysis:
- (a) The first captures the value of an additional customer buying and playing on Xbox. This includes revenues from all sources of spend, namely games, add-ons, subscription, and hardware. It does not include any purchase of future generation consoles. We use two different estimates for this LTV: one based on what Microsoft estimated in the ordinary course of business for customers acquired in 2021,⁵¹ and the other based on the downward adjustments made by the Parties in relation to their incentives analysis.⁵²
 - (b) The second captures the value to Activision of an additional customer buying and playing CoD in 2021. This was provided by the Parties as part of their incentives analysis.⁵³

Results

62. According to the LTV used and our assumption on switching rates of non-surveyed CoD gamers, we find:
- (a) Using Xbox LTV used in the ordinary course of business,
 - (i) If we assume non-surveyed CoD gamers switch as much as surveyed CoD gamers, foreclosure will imply a net profit of \$[X] billion for the Merged Entity.
 - (ii) If we assume non-surveyed CoD gamers do not switch at all, foreclosure will imply a net profit of \$[X] billion for the Merged Entity.

⁵⁰ Microsoft response to the CMA's s109 notice.

⁵¹ Parties submission to the CMA.

⁵² Parties submission to the CMA.

⁵³ Parties submission to the CMA.

- (b) Using Xbox LTV after the Parties' downward adjustments,
- (i) If we assume non-surveyed CoD gamers switch as much as surveyed CoD gamers, foreclosure will imply a net loss of \$[X] million for the Merged Entity.
 - (ii) If we assume non-surveyed CoD gamers do not switch at all, foreclosure will imply a net loss of \$[X] million for the Merged Entity.

Interpretation and limitations

- 63. Given the nature of the LTV used, our results should be interpreted as the expected net profit or loss made over the course of five years by the Merged Entity as a result of a foreclosure strategy.
- 64. This model has the advantage of using estimates used by Xbox to inform its commercial decisions.
- 65. However, our model has some limitations. The most important are:
 - (a) It excludes any margin gained by Microsoft through CoD sales on PC. This is likely to underestimate the gains of the Merged Entity.
 - (b) Xbox LTV does not [X] (see Chapter 7).

Appendix F: Foreclosure of rival PC operating systems

Introduction

1. Microsoft offers, amongst other products and services, Windows OS, a PC operating system (**OS**), which provides a graphic-based interface between the user and the PC's hardware and software. Windows PC OS' rivals include MacOS, ChromeOS, and other Linux OSs.
2. One third party complainant [X] submitted that, post-Merger, the Merged Entity would have the ability and incentive to foreclose rival PC OSs by restricting or degrading their access to Activision's gaming content. According to this third party [X], (i) gaming is a highly important consideration in users' choice of PC and is critical to competition between rival PC OSs; (ii) Microsoft would have the technical ability to restrict or degrade access to Activision's content from rival PC OSs, whether through cloud-based or local distribution; and (iii) Microsoft would have the incentive to do so in order to protect its dominant position in PC OS.
3. As set out further below, our provisional view is that the available evidence does not support a finding that access to gaming content, and Activision content specifically, is likely to be sufficiently important to competition between PC OSs such that the withholding or degrading this input would foreclose PC OS rivals and substantially lessen overall competition in that market. The evidence suggests that (i) games do not drive choice of PC OS, (ii) a relatively low proportion of time on [X] is spent gaming and, an even lower proportion is likely to be spent playing Activision's games (even taking into account the third party complainant's [X] efforts to increase the number of Activision games available on [X] in the future), and (iii) given the wide range of functionality for which users choose to buy a PC, a very small proportion of those who have an interest in playing Activision games on [X] would be likely to switch to a different PC OS if these games were not available. As such, we do not consider further in this Appendix whether the Merged Entity would have the technical ability to restrict or degrade access to Activision's content, or whether it would have the incentive to do so.

Importance of gaming and Activision's gaming content to PC OS competition

4. The third party complainant [X] submitted a 2017 internal survey to evidence the importance of gaming in users' choice of PC OS. However, we consider that this survey shows that gaming is important for only a small minority of users and is unlikely to drive choice for PC OSs. The third party complainant

[REDACTED] highlighted that, according to this 2017 survey, [REDACTED]% of users who considered purchasing a [REDACTED], but ultimately chose not to, reported ‘major’ gaps in software availability, with desktop gaming specifically being listed as ‘very important’ and ‘essential’. However, the survey in fact indicates that only [REDACTED]% of users surveyed who considered purchasing a [REDACTED] but ultimately chose not to considered games to be ‘very important’, and [REDACTED]% stating that games are ‘essential’.¹ Instead, the survey suggests that the largest gap in terms of apps for [REDACTED] relates to the absence of [REDACTED]. The survey also found that [REDACTED] were the leading reasons for respondents not purchasing [REDACTED].²

5. The third-party complainant [REDACTED] also submitted data on the time spent gaming by its PC users.³ The data indicates that gaming accounted for [REDACTED]% of time spent on all of their PCs [REDACTED] as of July 2022 by app category, with [REDACTED]. While we note the submissions of the third party complainant [REDACTED] that these statistics may understate gaming as a use case as it does not include gaming that may occur in browsers, we also note that the gaming data submitted by this third-party complainant [REDACTED] cover all types of gaming, including lightweight single-player games such as *Solitaire*. This implies that gaming of the higher-end and more graphically intensive variety associated with console and some PC gaming is likely to form a smaller proportion of game time.
6. As for the importance of Activision’s gaming content specifically, the third party complainant [REDACTED] submitted that Activision’s content is ‘essential content’ and strategically important to the success of [REDACTED].⁴ However, we note the following points:
 - (a) Activision [REDACTED]. Activision’s PC games are predominantly in Windows-native format.
 - (b) The third party complainant [REDACTED]. As the third party complainant [REDACTED] has acknowledged, [REDACTED].⁵
 - (c) A further internal survey conducted by the third party complainant [REDACTED] in December 2022 indicates that [REDACTED] users ‘[REDACTED]’ (in contrast to high-demanding games such as Activision’s *CoD*).⁶
7. The third party complainant [REDACTED] has submitted that it has [REDACTED].⁷ However, even if these efforts succeed and increase access to Activision’s more

¹ [REDACTED] Internal Document.

² [REDACTED] Internal Document.

³ [REDACTED] response to RFI.

⁴ [REDACTED] presentation to the CMA.

⁵ [REDACTED] response to RFI.⁶ [REDACTED] Internal Document.

⁶ [REDACTED] Internal Document.

⁷ [REDACTED] follow-up submission.⁸ [REDACTED] Internal Document.

graphically intensive games on [REDACTED], we provisionally consider the available evidence still indicates that few users are likely to view access to Activision content as important in their choice of PC OS. In particular:

- (a) The third party complainant [REDACTED] submitted a survey dated December 2022 that indicates that [REDACTED], including a number of Activision's games, such as *CoD* and *World of Warcraft*.⁸ This suggests that less than [REDACTED] would like to play Activision games that are not available on [REDACTED] such as *CoD* and *World of Warcraft*. The share of respondents that expected specifically Activision games to be available on [REDACTED] is also likely to be smaller than this, given that the [REDACTED] of respondents referred to above were responding in relation to a broad range of games, including non-Activision games.⁹
 - (b) Furthermore, if the respondents to the 2022 survey are representative of the wider [REDACTED] user-population, we consider the above data suggest that any effect of Activision titles such as *CoD* becoming available on [REDACTED] is likely to be very small, given that gaming accounts for only [REDACTED]% of time spent on all [REDACTED] (as noted above at paragraph 5, including the limitations with this number). While treating this evidence with caution (given it comes from different sources), taken together we consider it would suggest that the proportion of time spent on [REDACTED] that would be spent on Activision games if they were available would likely be of the order of less than [REDACTED]%.
8. Given the wide range of functionality for which users buy a PC, we would expect that only a fraction of [REDACTED] users would switch to a different PC OS if Activision's games were not available on [REDACTED].
 9. Overall, in view of the above, we provisionally consider that the available evidence does not support a finding that access to gaming content, and Activision content specifically, is likely to be sufficiently important to competition between PC OSs such that the withholding or degradation of this input would foreclose PC OS rivals and substantially lessen overall competition in that market.
 10. With respect to the element of the complainant's [REDACTED] concern that Microsoft would have the ability to restrict or degrade access to Activision's content through cloud-based distribution, the overall dynamics in relation to the supply of Activision content to rival cloud gaming platforms is the focus of TOH2.

⁸ [REDACTED] Internal Document.

⁹ Other games mentioned by respondents were Minecraft, Fortnite, Sims, Casino/Gambling Games and Online Gambling, Roblox, Grand Theft Auto and Among Us.

Appendix G: CMA Incentives model



Glossary

the Act	The Enterprise Act 2002
Activision	Activision Blizzard, Inc
Activision Publishing	Activision Publishing, Inc
the Activision segment	Activision Publishing, Inc
API	Application programming interface
the Blizzard segment	Blizzard Entertainment, Inc
BYOG	Bring your own game
B2P	Buy-to-play
CMA	Competition and Markets Authority.
CMA Survey	The online survey of CoD PlayStation gamers in the UK commissioned by the CMA and conducted by DJS between 31 October and 16 November 2022.
CMOs	Collective Management Organisations.
CoD	Call of Duty
CPU	Central Processing Unit
Cross-play	Playing a game with users across different consoles or devices.
Cross-progression	Games that allow cross-progression allow users to save game progress on one device and access it on another device
D&D	Day and date, a term used to refer to the date on which a game is released
DJS	DJS Research, the agency commissioned by the CMA to carry out a survey of PlayStation CoD gamers in the UK as part of this merger investigation

FMN	Final Merger Notice
FY2021	Financial year covering 2020/2021.
Gaming platform supplier	A supplier of a gaming platform, such as a gaming console.
Google	Google LLC.
GPU	Graphics processing unit
HDD	Hard disk drive
IaaS	Infrastructure-as-a-Service
the King segment	King Digital Entertainment
LTV	Lifetime value
Merged Entity	Microsoft and Activision, for statements referring to the future
the Merger	The anticipated acquisition of Activision by Microsoft.
MGS	Multi Game Subscription
Microsoft	Microsoft Corporation
MAU	Monthly active user
MOBA	Multiplayer Online Battle Arena
MSAN	The Microsoft Audience Network, which is Microsoft's digital advertising business
Multi-homing/multi-homers	Users who own more than one gaming platform, such as gaming consoles from two different console manufacturers
NTX	New To Xbox
NTX	New To Xbox. Bringing new users to the Xbox platform.
NVIDIA GFN	NVIDIA GeForce Now, which is NVIDIA's cloud gaming service
OS	Operating System, such as Microsoft Windows.
Parties	Microsoft and Activision

PaaS	Platform-as-a-Service
PCs	Personal computers
PlayStation Cloud Gaming	Any cloud gaming through PlayStation Plus or PlayStation Now.
PS+	PlayStation Plus
PUBG	PlayerUnknown's Battlegrounds
RFI	Request for information
RMS	Relevant merger situation, within the meaning of that term in section 23 of the Act.
SDKs	Software development kits
SLC	Substantial lessening of competition, within the meaning of that term in section 35 of the Act.
SIE	Sony Interactive Entertainment.
SSD	Solid-state drive
TAM	total addressable market
TOH	Theory of harm.
Vanguard	CoD: Vanguard, released in 2021 and the 18 th instalment of the CoD series.
WoW	World of Warcraft
Windows Client	A type of licence Microsoft offers for Windows – Windows for desktop PCs.
Windows Server	A type of licence Microsoft offers for Windows – Windows for servers.
xCloud	Xbox Cloud Gaming
XGP	Xbox Game Pass
XGPU	Xbox Game Pass Ultimate
XMP	Xbox Mobile Platform