

**UNITED STATES DISTRICT COURT  
FOR THE NORTHERN DISTRICT OF CALIFORNIA  
SAN FRANCISCO DIVISION**

FEDERAL TRADE COMMISSION

*Plaintiff,*

v.

MICROSOFT CORPORATION and  
ACTIVISION BLIZZARD, INC.,

*Defendants.*

Case No. 3:23-cv-02880-JSC

**DIRECT TESTIMONY OF ROBIN S. LEE, PHD**

**JUNE 25, 2023**

## Table of Contents

I. Introduction and assignment.....	2
I.A. Qualifications.....	2
I.B. Assignment.....	3
I.C. Summary of opinions.....	3
II. The merging parties and industry background.....	5
II.A. Video game consoles.....	5
II.B. Content library and cloud gaming services.....	6
II.C. Video games.....	7
III. Economic framework.....	19
III.A. Market definition.....	19
III.B. Analysis of effect on competition and consumers.....	21
IV. Video game consoles.....	23
IV.A. Market definition.....	23
IV.B. Ability and incentive to foreclose in the Consoles Markets.....	31
IV.C. Harm to competition and consumers from foreclosure.....	41
IV.D. Potential pro-competitive effects.....	45
V. Gaming services.....	52
V.A. Market definition.....	52
V.B. Ability and incentive to foreclose in the Gaming Services Markets.....	66
V.C. Harm to competition and consumers from foreclosure.....	69
V.D. Potential pro-competitive effects.....	73

Robin S. Lee, PhD, declares as follows:

## **I. Introduction and assignment**

### **I.A. Qualifications**

1. I am an economist who specializes in the field of industrial organization.

Industrial organization studies strategic interactions among firms, market structure, and factors that affect competition. I received my undergraduate and graduate degrees from Harvard University, receiving my AB in Economics in 2003, my AM in Economics in 2005, and my PhD in Business Economics in 2008.

2. I am currently a Professor of Economics in the Department of Economics at Harvard University and regularly teach courses in industrial organization to both graduate and undergraduate students. Previously, I served on the faculty at New York University's Stern School of Business. I have published 12 articles in peer-reviewed economic journals. Much of my work has examined relationships between firms producing complementary goods in "vertical markets." This includes:

- A 2013 paper examining the effects of vertical integration and exclusivity in the video game industry that was published in the *American Economic Review*, one of the leading journals in the economics profession;
- A 2017 paper examining bargaining and negotiations among suppliers and purchasers of health care services that received the Econometric Society's Frisch medal, an award presented biennially for the best applied paper published in the previous four years in *Econometrica*, another leading journal in the economics profession;
- A 2018 paper examining the welfare effects of vertical integration in the multichannel television industry published in *Econometrica*;

- A co-authored chapter in the most recent *Handbook of Industrial Organization* covering recent advances in the empirical analysis of contracting in vertical markets.

3. I have received other awards of recognition for my academic work on antitrust and competition policy, including the American Antitrust Institute’s award for Best Antitrust Article on Mergers and the Association of Competition Economics’ Best Paper Prize.

4. I am a co-editor of the *American Economic Journal: Microeconomics* and have served as an Associate Editor of the *International Journal of Industrial Organization*, both of which are top journals in the field of industrial organization.

5. I am offering my opinions as an economic expert and have been assisted by staff at Bates White LLC. My curriculum vitae is attached as Appendix A.

#### **I.B. Assignment**

6. I have been asked by counsel for the FTC to evaluate the likely competitive effects of Microsoft Corp.’s proposed acquisition of Activision Blizzard, Inc. (“Proposed Transaction”). I submitted two expert reports in this matter that present my opinions and explain my bases for these opinions.<sup>1</sup> My initial report is attached as Exhibit 1, and my reply report is attached as Exhibit 2.

#### **I.C. Summary of opinions**

7. First, *High-Performance Video Game Consoles* and *Video Game Consoles* (collectively, “Consoles Markets”) and *Content Library and Cloud Gaming Services*, *Content Library Services*, and *Cloud Gaming Services* (collectively, “Gaming Services Markets”) are relevant antitrust product markets for analyzing the competitive effects of the Proposed Transaction. The United States is a relevant geographic market for each relevant product market.

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<sup>1</sup> PX5000 (Corrected Expert Report of Robin S. Lee, PhD, May 26, 2023 [hereinafter “Expert Report”]); PX5001 (Expert Reply Report of Robin S. Lee, PhD, June 9, 2023 [hereinafter “Expert Reply Report”]).

8. Second, as a result of the Proposed Transaction, the combined firm (“Merged Entity”) would have the *ability* and *likely economic incentive* to foreclose Microsoft Corp.’s (“Microsoft”) rivals in each relevant market from Activision Blizzard, Inc. (“Activision”) content. As to *ability*, the Merged Entity would be able to withhold Activision content from, or degrade Activision content to, Microsoft’s rivals in each relevant market, which would meaningfully harm their competitiveness and consumer demand for their products. As to *incentive*, the Merged Entity would (i) have a *greater economic incentive* to engage in foreclosure than an independent Activision in each relevant market; and (ii) the Merged Entity *would likely have the economic incentive* to engage in foreclosure by withholding Activision content from, or degrading Activision content to, Microsoft’s rivals in each relevant market.

9. Third, relative to the “but-for world” without the merger in which Activision remains independent, the Proposed Transaction would likely lead to foreclosure of Activision content in each relevant market, generating competitive and consumer harm arising from: (i) less content or degraded content on Sony Group Corporation’s (“Sony”) PlayStation consoles, leading to lower-quality or higher-priced products and reduced consumer choice in the Consoles Markets, and (ii) a reduced likelihood of Activision content supporting additional content library and cloud gaming services not offered by (or in an existing agreement with) Microsoft, likely leading to lower-quality or higher-priced products, reduced choice, and lessened innovation in the Gaming Services Markets.

10. Fourth, the Proposed Transaction is unlikely to result in benefits that are cognizable (verifiable, merger-specific, and not arising from an anticompetitive reduction in output or services) and sufficient to eliminate or offset the likely harms arising from foreclosure. Further, Microsoft’s 2023 agreements with Nintendo Co., Ltd. (“Nintendo”) and certain cloud

gaming service providers are insufficient to eliminate or offset likely competitive and consumer harm arising from the Proposed Transaction.

11. I have reviewed the reports of Defendants’ economic experts, Dr. Elizabeth Bailey and Prof. Dennis Carlton. Their opinions do not change my conclusions.

## **II. The merging parties and industry background**

### **II.A. Video game consoles**

12. Microsoft, among its many lines of business, produces and sells Xbox video game consoles. Video game consoles (“consoles”) are consumer devices that are primarily used to play video games. Since the 2001 release of the original Xbox console, Microsoft has released four generations of Xbox consoles. The latest generation of Xbox consoles are the Xbox Series X and Series S consoles (collectively, “Series X|S”), released in November 2020.

13. Microsoft, Sony, and Nintendo produce the most popular consoles available today. The video game industry has adopted the convention of grouping releases of video game consoles into generations. As Microsoft has represented: “Today, consoles are in their so-called ‘ninth generation,’ following the releases of the Sony PlayStation 5 and Xbox Series X|S in November 2020.”<sup>2</sup> The PlayStation 5, also released in November 2020, is the latest generation of Sony’s PlayStation consoles. Nintendo sells the Switch, a console released in 2017 and viewed by many industry participants, including Microsoft, as a Generation 8 (or 8.5), and not Generation 9, console.<sup>3</sup>

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<sup>2</sup> PX0003 at -105 (Microsoft FTC Second Request response, Jul. 1, 2022). *See also* PX7040, Deposition of Tim Stuart, Mar. 28, 2023 [hereinafter “Stuart Depo. Tr.”] at 110:6–111:17, 143:16–144:20, 145:17–146:5; PX7053, Deposition of Jim Ryan, Volume I, Apr. 6, 2023 [hereinafter “Ryan Depo. Tr. (Vol. I)”] at 14:2–10; PX7048, Deposition of Matthew Booty, Mar. 29, 2023 at 136:5–137:7; 137:20–138:14; PX7036, Deposition of Satya Nadella, Mar. 20, 2023 [hereinafter “Nadella Depo. Tr.”] at 111:4–112:2.

<sup>3</sup> PX1888 at -036 (email correspondence and attachment, Dec. 2021) (Microsoft slide deck stating that “Nintendo Switch and Gen8 consoles are excluded” in calculating “Console Gen9 Share – Relative market share between Xbox Series X|S and PlayStation 5 in key markets”); PX1747 at -009 (email correspondence and

14. Microsoft publishes video games through Xbox Game Studios, comprising 23 game development studios, including 8 studios that were included in Microsoft's acquisition of ZeniMax Media Inc. ("ZeniMax"), announced in September 2020 and finalized in March 2021.

15. Games developed and published by a console manufacturer for their own consoles are referred to as "first-party" games; games published by independent publishers for a console manufactured by another firm are referred to as "third-party" games.

## **II.B. Content library and cloud gaming services**

16. Microsoft's Xbox Game Pass subscription service, launched in 2017, is available in three tiers. Game Pass for Console gives subscribers access to a *content library* of over 300 first-party and third-party games for download to play on an Xbox console; Game Pass for PC provides access to a library of games for download to play on a Windows PC. The highest tier, Game Pass Ultimate, provides access to a library of games for both Xbox consoles and Windows PCs, which subscribers can download to play. The Ultimate tier also provides *cloud gaming* capability through Microsoft's Xbox Cloud Gaming service (originally codenamed Project xCloud), allowing subscribers to play certain games by streaming from a remote server to any supported web-enabled device such as an Xbox console, PC, mobile device, or smart TV.

17. Other content library services available today include PlayStation Plus (Extra and Premium tiers), Nintendo Switch Online, Amazon.com, Inc.'s ("Amazon") Luna+, EA Play from Electronic Arts, Inc. ("EA"), and Ubisoft+ from Ubisoft Entertainment SA ("Ubisoft").

18. In addition to Xbox Game Pass Ultimate, certain other gaming services bundle content library services and cloud gaming services together, including PlayStation Plus Premium

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attachment, Aug. 2022); PX2415 at -002-004 (Activision executive summary) (Activision white paper on the

See also PX7053, Ryan Depo. Tr. (Vol. I) at 21:9-14, 21:21-22:3.

and Amazon Luna+.<sup>4</sup> Gaming services that offer cloud gaming services without content library services include Nvidia GeForce Now and enable consumers to stream games that they already own using a bring-your-own-game (“BYOG”) approach. Importantly, even with a BYOG approach, cloud gaming service providers must obtain permission from video game publishers to stream their games through the services.

## II.C. Video games

19. Activision develops and publishes video games for consoles, PCs, and mobile devices. Microsoft often refers to Activision, along with EA, Take-Two Interactive Software, Inc. (“Take-Two”), and Ubisoft, as one of the “Big 4” independent video game publishers.<sup>5</sup>

20. Activision’s most successful video game franchise is *Call of Duty*, a first-person shooter video game series playable on video game consoles and PCs. Since its first release in 2003, *Call of Duty* has become one of the most successful video game franchises in history, earning approximately \$ [REDACTED] in sales revenues annually. The most recent installment in the franchise, *Call of Duty: Modern Warfare II*, earned a franchise record of over \$ [REDACTED] in revenue in the first 10 days after its release.

21. Activision also produces other popular video games for consoles, including games from the *Diablo*, *Overwatch*, *Crash Bandicoot*, and *Tony Hawk* franchises, as well as video games for other devices, including games from the *Candy Crush* (for mobile devices) and *Warcraft* (for PCs) franchises. Activision’s net revenues in FY2022 were \$ [REDACTED]. As of December 2022, Activision had over [REDACTED] monthly active users across all its games.

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<sup>4</sup> Google LLC (“Google”) offered a content library and cloud gaming service, Google Stadia, but discontinued it in January 2023.

<sup>5</sup> PX5000 at -030–031 (Expert Report, ¶ 72).



### II.C.1. Video game content drives sales of video game consoles and gaming services

22. Both consumers and industry participants acknowledge that content drives sales.

As a 2021 Microsoft document states, “In the business of gaming, content remains king.”<sup>6</sup>

23. Video game sales, revenues, and engagement are concentrated among a relatively small number of hit “blockbuster” titles and franchises, often referred to as “AAA” games. AAA games often are high-budget video games that have, or are expected to have, high unit sales and revenues. They tend to have high-quality graphics and gameplay, have significant marketing and promotion, and usually require substantial investment and take longer to develop and publish than those without the AAA description.<sup>7</sup> For example, Microsoft Gaming CEO Phil Spencer testified, “[T]he notion of a AAA game is a game with a high development budget with presumably a high expectation for ... sales and kind of splash when it launches.”<sup>8</sup>

24. Differentiated and exclusive content—i.e., content that is available on one console or service but not on all of its rivals, even for a short period of time—allows a console or service to provide a distinct benefit to consumers.<sup>9</sup> Exclusive content can be a driver of consumer

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<sup>6</sup> PX1070 at -003 (Xbox strategy document, Feb. 2021). *See also* PX1538 at -005 (email correspondence and attachment, Feb. 2021); PX1087 at -001 (email correspondence, Jun. 2020) (“Well said, content is king.”); PX9102 at -009 (Microsoft FY2022 Q2 Earnings Call transcript, Jan. 25, 2022) (“The big bets we have made across content, community, and cloud over the past few years are paying off... Our differentiated content is driving the service’s growth, and we released new AAA titles this holiday to rave reviews and record usage.”).

<sup>7</sup> PX4671 at -001 (email correspondence, Feb. 2023) (“AAA games continue to grow in scope and size. The barrier to entry for a AAA shooter or RPG is very high.”); PX8001 at -008 (Declaration of Jim Ryan, Dec. 5, 2022) (“Developing and producing AAA games often costs over \$100 million, requires hundreds or thousands of developers, and takes years.”); PX1063 at -003 (email correspondence, Mar. 2020).

<sup>8</sup> PX7011, Investigational Hearing of Phil Spencer, Volume I, Oct. 11, 2022 [hereinafter “Spencer IH Tr. (Vol. I)”] at 36:24–37:3. *See also* PX7011, Spencer IH Tr. (Vol. I) at 37:8–21; PX7040, Stuart Depo. Tr. at 56:12–13 (“Yeah. From my perspective, I look at it AAA being high users, high engagement, high hours.”); PX7042, Deposition of Jamie Lawver, Mar. 27, 2023 [hereinafter “Lawver Depo. Tr.”] at 180:6–10 (“So for me, AAA means the larger budget, bigger reach, the bigger games, higher quality, like that’s what AAA means to me. And those games typically have the most reach and most engagement.”); PX7056, Deposition of Diarmuid Murphy, Apr. 7, 2023 at 195:9–16 (“And, so, I would look at some of the titles below like *Red Dead Redemption 2* from Rockstar, *Fallout 4* those were some of the best selling games and biggest and most expensive games made in the year they came out. So those would qualify as AAA and major AAA.”).

<sup>9</sup> *See* PX7031, Deposition of Aaron Greenberg, Mar. 14, 2023 [hereinafter “Greenberg Depo. Tr.”] at 75:24–76:22.



explains that “[c]ontent is the primary engine behind subscription growth,”<sup>14</sup> in particular, differentiated content.<sup>15</sup> In addition, a declaration from Phil Eisler, Vice President and General Manager of Nvidia GeForce Now, likewise observes, “Access to AAA titles, which are the latest, most-popular gaming franchises, is critical to the success of any gaming platform.”<sup>16</sup>

### II.C.2. Activision content is an important driver of console and gaming service sales

28. Documentary evidence from Activision and Microsoft indicates that Activision content is a particularly important driver of console and gaming service sales and engagement:

- A 2019 Microsoft document sent among members of the Xbox leadership team (including Microsoft Gaming CEO Phil Spencer, CFO Tim Stuart, and Corporate Vice President of Game Creator Experience and Ecosystems Sarah Bond) that discusses terms to put content on Xbox Series X|S consoles states that Activision “**considers themselves ultimate ‘kingmakers’, entitled to share in platform economics**” (emphasis added).<sup>17</sup>
- A 2019 Activision presentation discussing a potential Activision partnership with [REDACTED] includes a slide about the [REDACTED]  
[REDACTED]<sup>18</sup>
- A March 2020 Activision slide describing ongoing negotiations with console manufacturers is consistent with Activision [REDACTED]  
[REDACTED]  
[REDACTED]<sup>19</sup>

<sup>14</sup> PX1065 at -015–016 (email correspondence and attachment, Nov. 2020) (“Achieving our subscriber ambitions is predicated on our ability to create value for our members and partners, beginning with continued investment in content.”).

<sup>15</sup> PX1065 at -002, -003, -015–017 (email correspondence and attachment, Nov. 2020).

<sup>16</sup> PX8000 at -006 (Declaration of Phil Eisler, Dec. 2, 2022).

<sup>17</sup> PX1019 at -009 (email correspondence and attachment, Aug. 2019).

<sup>18</sup> PX2159 at -007 (email correspondence and attachment, Sep. 2019).

<sup>19</sup> PX2419 at-004 (Activision Blizzard internal presentation, Mar. 2020).

- A 2021 Activision presentation discussing Sony support for *Call of Duty* considers

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]<sup>20</sup>

29. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED].<sup>21</sup> Based on standard principles of economic bargaining theory, this is consistent with [REDACTED]

[REDACTED]

[REDACTED].<sup>22</sup> [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED].<sup>23</sup>

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<sup>20</sup> PX2049 at -006 (Activision Blizzard internal presentation).

<sup>21</sup> PX7003, Investigational Hearing of Sarah Bond, Sep. 6, 2022 [hereinafter “Bond IH Tr.”] at 110:4–111:2, 218:19–4, 257–258:9; PX1182 at -003 (email correspondence, Jan. 2022); PX0006 at -106 (European Commission Form CO, Case M. 10646, Acquisition by Microsoft of Activision Blizzard, Sep. 30, 2022); PX1182 at -002 (email correspondence, Jan. 2022); PX2157 at -005 (email correspondence and attachments, Apr. 2021); PX7052, Deposition of Armin Zerza, Apr. 6, 2023 [hereinafter “Zerza Depo. Tr.”] at 203:24–204:2 [REDACTED]; PX1245 at -001 (email correspondence, Jan. 2020).

<sup>22</sup> This insight follows from the standard economic theory of bargaining, in which eventual outcomes are affected by what each party anticipates receiving in the event of failing to reach an agreement. All else equal, the worse that the no-agreement outcome is for one side of a negotiation, the worse is that party’s bargaining leverage and negotiated outcome.

<sup>23</sup> PX1182 at -004 (email correspondence, Jan. 2022) (In a March 2020 email, Sarah Bond, Microsoft Gaming Corporate Vice President, writing, [REDACTED]

30. Importantly, this evidence also indicates that there is no comparable replacement for Activision content: if Microsoft and Sony could easily replace Activision content with alternative content that generated comparable value, then there is no clear economic reason that

[REDACTED]

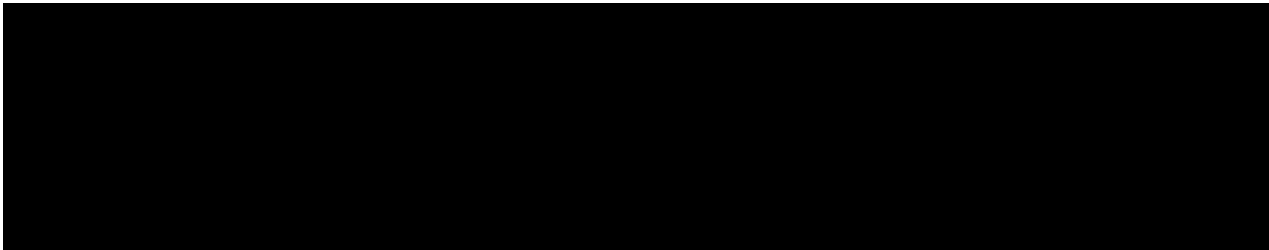
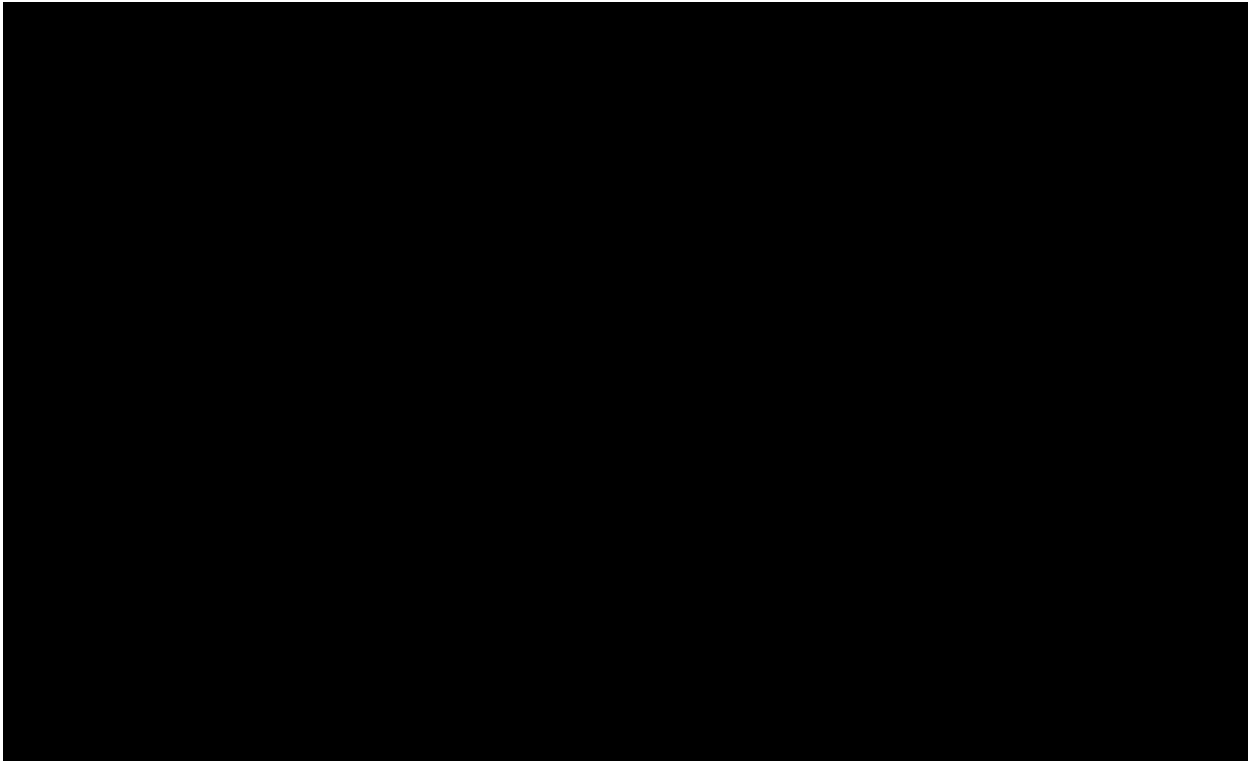
[REDACTED]

31. To further investigate the impact of Activision content on shares of console sales, I developed and estimated an econometric model of consumer demand for video game consoles and video game titles estimated using Generation 8 sales data (henceforth, “Share model”).<sup>24</sup> The model relates the relative monthly shares of Microsoft Xbox and Sony PlayStation console sales to the availability and attractiveness of exclusive content on each console. I estimated that removing a *Call of Duty* title from PlayStation consoles could increase the share of Xbox consoles sold over the course of a year, relative to PlayStation consoles, by approximately [REDACTED]. I also estimated that removing a non-*Call of Duty* Activision title from PlayStation consoles could increase the share of Xbox consoles sold over the course of a year by [REDACTED].

32. As shown in Figure 1, the Share model predicts that making games with higher unit sales exclusive tends to generate greater changes in Xbox and PlayStation console shares. The predicted increases in Xbox shares from making *Call of Duty* titles exclusive are higher than for many other AAA titles, as *Call of Duty* game sales are correspondingly higher than for most other AAA titles.

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<sup>24</sup> I do not estimate the model using Generation 9 data due to the more limited time frame (less than 3 years of available data as opposed to 7) and the prevalence of Generation 9 console shortages which makes it difficult to relate hardware sales to software availability. PX5000 at -156 (Expert Report, n. 648).



**II.C.3. It is difficult to replace the impact and attractiveness of Activision content**

33. If a console or gaming service were to lose access to Activision content, there are limited and likely insufficient alternative options for a console manufacturer or gaming service provider to *replace* the impact and attractiveness of Activision content.

34. First, it is difficult and costly to develop new, attractive video game content, especially AAA content.<sup>25</sup> Evidence indicates that new, successful video game intellectual

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<sup>25</sup> PX8000 at -006 (Declaration of Phil Eisler, Dec. 2, 2022) (“Today’s AAA video games ... require tens of millions of dollars (in some cases over \$100 million) and years to produce,”); PX8003 at -005 (Declaration of Dov

property (“IP”) is challenging and costly to create. Most high-grossing games are part of existing franchises.<sup>26</sup> A 2022 Activision presentation emphasizes that [REDACTED]

[REDACTED]  
[REDACTED]  
[REDACTED]<sup>27</sup> In addition, Jim Ryan, CEO of Sony Interactive Entertainment (“SIE”), testified that “[REDACTED]

[REDACTED].”<sup>28</sup>

35. Microsoft documents also highlight the scarcity of attractive video game content.<sup>29</sup> For example, a 2020 Microsoft strategy document states, “different than other entertainment markets, the supply of attractive games is structurally limited. Long development cycles, progressive industry consolidation, and high average engagement per title translate into a reduced content supply in gaming relative to music or video.”<sup>30</sup> Matt Percy, General Manager of Content Planning for Xbox, noted in a January 2023 email, “There are relatively few of these games being released – either by us or by [third parties] – annually. [REDACTED]

[REDACTED]”<sup>31</sup>

36. Second, it is difficult for console manufacturers and gaming service providers to add valuable content that is not already available on their products. As I discuss below,

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Zimring, Dec. 7, 2022) (“The decision to close Stadia’s internal game studios after less than 14 months of operation was in large part a result of the increasing costs of creating best-in-class video games.”); PX4721 at tab “Sheet1” (CMA Annex 028.2, Microsoft Denali analysis) (Showing Activision spent \$ [REDACTED] in development costs for *Call of Duty Cold War* during 2019–2021 and \$ [REDACTED] for *Call of Duty Modern Warfare* (2019 release)).

<sup>26</sup> In 2022, 8 of the top 10 highest revenue titles for each of Xbox and PlayStation consoles were part of multi-game franchises. PX5000 at -037–038 (Expert Report, Figure 2, Figure 3).

<sup>27</sup> PX2107 at -043, -080 (email correspondence and attachment, Jun. 2020).

<sup>28</sup>

<sup>29</sup> See also PX1154 at -001 (email correspondence, Aug. 2021).

<sup>30</sup> PX1065 at -017 (email correspondence and attachment, Nov. 2020).

<sup>31</sup> PX4673 at -002 (email correspondence, Jan. 2023).

publishers of the most successful third-party video games already have an incentive to support multiple video game consoles. A June 2021 exchange between Xbox executive James Campbell and Microsoft Gaming CFO Tim Stuart illustrates the high cost of bringing high-value content to a video game product, where both executives acknowledge that Microsoft spends “dump trucks of money” to secure content for Xbox Game Pass.<sup>32</sup>

37. Third, popular multi-homing content that *already supports* a console or gaming service cannot serve as a *replacement* for lost access to Activision content—by definition, such content is already available on the console or gaming service.

**II.C.4. First-party publishers, such as Microsoft, tend to have a greater economic incentive than third-party publishers to make content exclusive, and have exhibited behavior consistent with such greater economic incentive**

38. First-party publishers tend to have a greater economic incentive than third-party publishers to make content exclusive to their own consoles and gaming services, because exclusivity tends to drive greater sales for their video game consoles and services.

39. Evidence indicates that Microsoft routinely pursues full exclusivity for its first-party content. Microsoft’s CEO, Phil Spencer, testified that “[REDACTED]

[REDACTED]”<sup>33</sup> Consistent with this testimony, Microsoft’s popular first-party console franchises such as *Halo* and *Gears of War* are exclusive to Xbox consoles and PCs.<sup>34</sup>

40. This behavior extends to acquired studios.

41. Following the acquisition of ZeniMax in 2021, Microsoft announced that it planned to release several future ZeniMax titles, including *Starfield* and *Redfall*, exclusively on

<sup>32</sup> PX4365 at -001 (chat transcript, Jun. 2021).

<sup>33</sup> PX7011, Spencer IH Tr. (Vol. 1) at 360:2–362:13.

<sup>34</sup> PX5000 at -195 (Expert Report, ¶ 522).



Xbox consoles and PCs.<sup>35</sup> [REDACTED]

[REDACTED]<sup>36</sup> [REDACTED]

[REDACTED]<sup>37</sup>

42. Microsoft also acquired a series of game studios in 2018 and 2019, including Ninja Theory, Double Fine, Obsidian Entertainment (“Obsidian”), and inXile Entertainment.<sup>38</sup> Microsoft’s internal documents stated that although existing commitments to other gaming products would be honored, “[REDACTED]

[REDACTED].”<sup>39</sup>

Consistent with this, Obsidian games *Grounded* (which offers multiplayer play) and *Pentiment* launched exclusively on Xbox in 2022.<sup>40</sup>

<sup>35</sup> See PX7012, Investigational Hearing of Phil Spencer, Volume II, Oct. 12, 2022 at 406:23–24; 412:7–13; PX7040, Stuart Depo. Tr. at 340:6–9, 288:10–289:11, 338:4–7; PX4323 at -003 (Microsoft email correspondence, Mar. 2021); PX0027 at -003 (Microsoft FTC Second Request response appendix, Sept. 2, 2022); PX0038 at -006 (Microsoft FTC Second Request response supplement, Sept. 2, 2022).

Evidence indicates *Starfield* in particular is a highly anticipated game. See PX1080 at -001 (chat transcript, Mar. 2021) (Aaron Greenberg stating that *Starfield* “will be our single biggest share shift opportunity” for Xbox Series X|S); PX1527 at -002 (email correspondence, Sep. 2020).

<sup>36</sup> PX7042, Lawver Depo. Tr. at 348:19–349:3, 360:13–20 (“Q. Do you know whether *Starfield* and *Redfall* were set to be on PlayStation before *ZeniMax* was acquired? ... A. My understanding would be that it would be expected to be on all platforms, yes.”); PX4430 at -005 (Project *Redfall* financial materials, Mar. 2022); PX4303 at -005 (email correspondence, Sep. 2020). See also PX4435 at -001, -012 (email correspondence and attachments, Feb. 2022).

<sup>37</sup> PX7042, Lawver Depo. Tr. at 320:4–24, 327:10–328:5, 331:13–336:13; PX4309 at -001 (chat transcript, Nov. 2021); PX4334 (chat transcript, Nov. 2021). See also PX1116 at -001 (email correspondence, Feb. 2021).

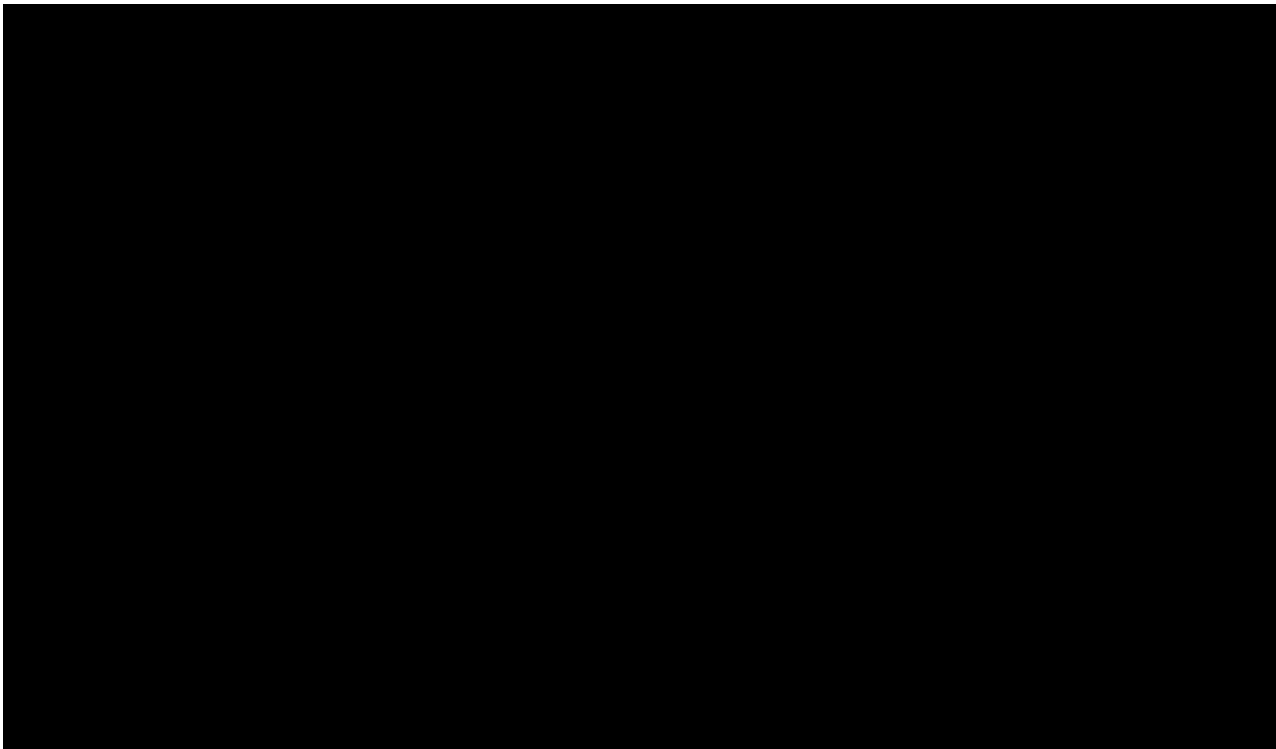
<sup>38</sup> PX0003 at -086–087 (Microsoft FTC Second Request response, Jul. 1, 2022). See also PX1425 at -005 (email correspondence and attachment, Dec. 2020).

<sup>39</sup> PX1949 at -002 (email correspondence, Aug. 19, 2019); PX1951 at -007 (email correspondence, Aug. 22, 2019). See also PX1950 at -001 (email correspondence, Aug. 2019). [REDACTED]

<sup>40</sup> PX7031, Greenberg Depo. Tr. at 56:2–24.

43. In contrast to first-party publishers, independent third-party publishers typically have strong economic incentives to support multiple consoles. Doing so provides access to a larger potential customer base and greater potential game sales. Figure 2 visualizes the different incentives faced by first- and third-party studios with respect to exclusivity by comparing the fraction of exclusive and non-exclusive unit sales revenue, by publisher, accounted for by games released on PlayStation 5 or Xbox Series X|S consoles during November 2020–February 2023.

**Figure 2: Share of US unit sales revenue from cross-platform and exclusive games for Generation 9 consoles released Nov. 2020–Feb. 2023, by publisher**



Source: PX5000 at -161 (Expert Report, Figure 38).

Notes: [1] Limited to US sales of games for Generation 9 consoles released November 2020–February 2023. Games with any positive revenue on a console from November 2020–February 2023 are considered “available” on that console.

[2] Revenue from games published by ZeniMax/Bethesda Softworks is included in Xbox Game Studios revenue and outlined in red. One Bethesda title (*Ghostwire: Tokyo*) had not been released on Xbox Series X|S as of Feb. 2023. All other ZeniMax/Bethesda titles were released on both PlayStation 5 and Xbox Series X|S before Feb. 2023 and are categorized as supporting both, even though Microsoft Megapivot data report no revenue for these titles on Xbox Series X|S.

[3] Microsoft Megapivot data contain no sales of *Minecraft* for Generation 9 consoles. *Minecraft Legends* was released by Xbox Game Studios on Xbox Series X|S and PlayStation 5 consoles on April 18, 2023.

44. For each of the “Big 4” independent publishers, well over █% of revenue was earned from multi-platform titles. Conversely, about █% of PlayStation Studios revenue was

from games exclusive to PlayStation consoles, [REDACTED]  
[REDACTED].<sup>41</sup> This greater propensity for first-party titles to be exclusive is consistent with console manufacturers benefiting sufficiently from exclusivity and increased console sales to be willing to forgo selling first-party titles to a larger set of users on rival consoles.

**II.C.5. Without procompetitive benefits, exclusivity that reduces the availability of content on video game consoles and gaming services likely harms competition and consumers**

45. The effect of exclusivity on competition and consumers is *case-specific*. As a matter of economics, when a firm improves its own product’s quality *without* diminishing the qualities of rivals’ products, consumers tend to benefit. But when products of rivals are worsened without any quality improvements elsewhere sufficient to offset that diminished quality, consumers and competition, in general, are harmed.

46. A console manufacturer can improve the quality of its product relative to rivals by releasing a *new* exclusive first-party video game. Though exclusivity for this first-party game prevents consumers from playing the game on rival gaming products, consumers in this case would tend to benefit compared to a world where the game would not have existed at all.

47. However, in the present context, a video game console manufacturer and gaming service provider (Microsoft) is seeking to *acquire* an *existing* third-party video game publisher (Activision) and its suite of *current and future* video game franchises and intellectual property. Absent a meaningful improvement in the (price-adjusted) quality or quantity of Activision content resulting directly from the Proposed Transaction, making Activision content exclusive to

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<sup>41</sup> [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

Xbox products would tend to *reduce* the availability of content on other consoles and gaming services compared to a world without the merger. This in turn *decreases the quality of products available and thus likely harms competition*. Consumers would likely be harmed due to higher prices, reduced choice, and lower product quality (as they would be able to access Activision content on fewer consoles and gaming services), and overall video game console and gaming service sales would likely be lower.

### **III. Economic framework**

48. I analyzed the competitive effects of the Proposed Transaction by first identifying relevant antitrust markets. I then analyzed the likely impact of the Proposed Transaction on competition and consumers in each relevant market.

#### **III.A. Market definition**

49. As is the case for the analysis of horizontal mergers, defining antitrust markets for “vertical” mergers helps to focus attention on where potential competitive effects may occur. Vertical mergers involve two firms that offer products in different, but related, markets. Here, Microsoft sells video game consoles and gaming services; Activision produces video games.

50. Market definition aims to identify products that closely compete with the combined firm (here, the combined Microsoft and Activision) by identifying a set of products that customers could substitute to when one of the products offered by the combined firm or its competitors is subjected to a price increase or quality decrease.<sup>42</sup> Hence, antitrust markets contain products that the combined firm would benefit from disadvantaging.

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<sup>42</sup> Market definition is not “an end in itself” and is one of several useful tools for the overall analysis of competitive effects. By explicitly labeling products as inside or outside of a market, market definition draws a discrete boundary around products even when such a determination may depend on more nuanced measures of firms’ competitive positions. In light of these considerations, I analyzed “broader” markets that wholly contain all the products in other “narrower” markets that I also defined. In doing so, I evaluated whether competitive effects still may occur when additional products are included or excluded from particular markets.

51. Importantly, a relevant antitrust market need not include *all* potential substitutes that consumers might consider—doing so would tend to overstate the competitive significance of relatively distant substitutes. For example, pen and paper *could* be a substitute for *some* consumer interested in a laptop, but it is unlikely that pen and paper would be a close substitute for enough consumers to meaningfully constrain the pricing decisions of laptop manufacturers.

52. I used the Hypothetical Monopolist Test (“HMT”) framework to evaluate each of the candidate relevant markets. Under the HMT, a candidate group of potentially differentiated products constitute a relevant market if a hypothetical monopolist that owned all of these products likely would impose at least a small but significant and non-transitory increase in price (“SSNIP”), usually assumed to be 5%, on at least one product in the market. The logic behind the HMT is to ensure that the relevant market is sufficiently broad so that a hypothetical monopolist’s attempted exercise of market power (e.g., increase in price) would not be rendered unprofitable by customers substituting to products outside of the market, but also not so broad as to overstate the competitive significance of relatively distant substitutes (such as pen and paper to a laptop).

53. One important factor that affects whether a hypothetical monopolist would find it profitable to implement a SSNIP is the fraction of sales of products subjected to such a price increase that would be lost to products outside of the candidate market. As the fraction of sales that remains in the candidate market is greater, the likelihood that a hypothetical monopolist would find a price increase profitable increases.

54. Throughout my analysis, I relied on both qualitative and quantitative evidence to inform whether consumers would remain within the market when prices for products increase, thereby indicating whether a hypothetical monopolist would likely find a SSNIP to be profitable.

This evidence includes documents and testimony from Microsoft and Activision (“Merging Parties”) and other industry participants that speak to the characteristics and features of products, to which products compete most closely with one another, and to which products constrain the pricing of products in each candidate market.

### **III.B. Analysis of effect on competition and consumers**

55. Economic literature has long recognized the potential of vertical mergers to have both pro- and anti-competitive effects. While vertical mergers could be beneficial in some circumstances, they can also harm competition and consumers if the merging parties engage in *foreclosure*. As a matter of economics, foreclosure in a vertical setting generally refers to denying or otherwise degrading access to an input or complementary product to rivals.<sup>43</sup> Foreclosure can result in higher prices, lower quality, and reduced innovation.

56. The economic reason that the Merged Entity would be more likely to engage in foreclosure than an independent Activision—i.e., withhold Activision content from or degrade Activision content to Microsoft rivals—is that Microsoft stands to earn significant profits from sales captured from rivals in each relevant market when they are foreclosed.

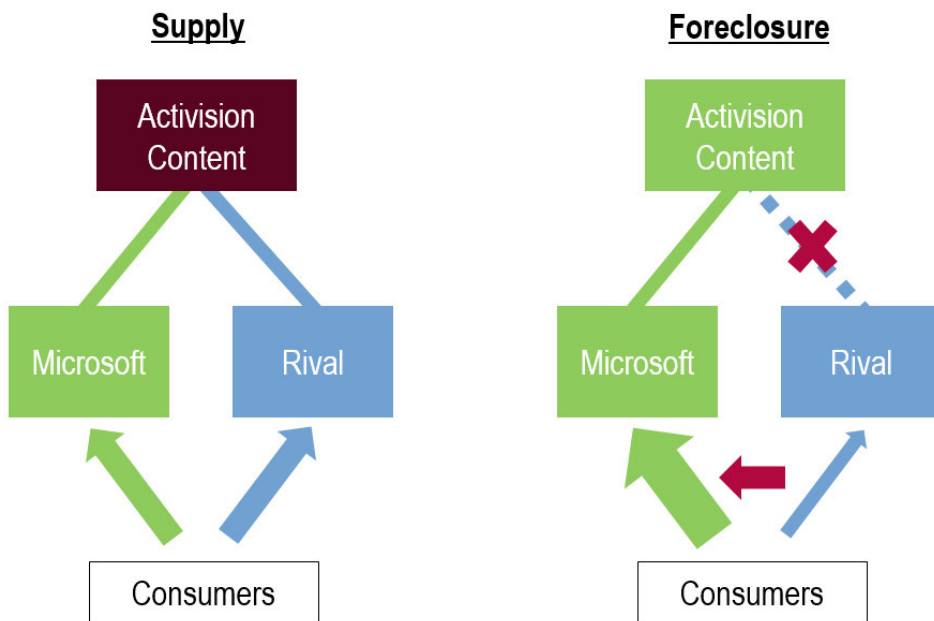
57. In Figure 3, on the left-hand side of the figure is a “supply” scenario in which Activision content is supplied to both Microsoft and a rival in one of the relevant markets prior to the merger (depicted by the solid lines at the top of the figure). On the right-hand side is a “foreclosure” scenario in which Activision content, following the merger, is either fully or partially foreclosed from the rival following the merger (represented by the dotted line and red

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<sup>43</sup> I focus on what is referred to in the economics literature as “upstream foreclosure,” whereby an input supplier further away from consumers in a vertical supply chain (i.e., “upstream”) is denied or offered in a degraded form to rivals of the integrated “downstream” unit. An example is when a manufacturer’s products is withheld from rivals of its integrated retailer. There is also “downstream foreclosure,” whereby rivals of the upstream supplier are foreclosed from access to the downstream unit.

“X”). If, in the foreclosure scenario, more consumers purchase Microsoft’s products than from disadvantaged rival (as depicted by the larger arrow linking consumers to Microsoft and the smaller arrow linking consumers to the rival), then Microsoft and by extension the Merged Entity stand to realize additional benefits from foreclosure.

**Figure 3: Diagram of potential foreclosure of Activision content to a Microsoft rival**



58. Unlike in an analysis of a horizontal merger, there is no established screen or presumption of harm based on market shares or concentration for the purposes of evaluating the competitive effects of a vertical merger. Moreover, the competitive harm arising from “vertical” conduct such as foreclosure of an upstream input does *not necessarily depend on the merged firm’s share in an appropriately defined downstream market*. Rather, the ability of the merged firm to harm competition (and thus, consumers) through foreclosure depends on the importance of the upstream input for attracting consumers and the availability of potential substitutes for the input.

59. To analyze whether the Proposed Transaction would likely lead to competitive and consumer harm in each relevant market, I adopted the following three-step approach:

- **Step 1:** I investigated whether it is likely that the Merged Entity *would engage in foreclosure* in each relevant market. Specifically, I focused on whether the Merged Entity would likely withhold Activision content from, or otherwise degrade Activision content provided to, Microsoft’s rivals. This likelihood depends on the *ability* and *economic incentive* of the Merged Entity to engage in foreclosure in each of the relevant markets.
- **Step 2:** I evaluated whether such foreclosure *would likely harm* consumers and competition in each relevant market.
- **Step 3:** I examined whether there are pro-competitive benefits from the Proposed Transaction that are cognizable and realizable only as a consequence of the merger, and if so, whether they would be sufficient to eliminate or offset any competitive and consumer harms in each relevant market.

#### **IV. Video game consoles**

##### **IV.A. Market definition**

###### **IV.A.1. High-Performance Video Game Consoles**

60. *High-Performance Video Game Consoles* is a relevant product market for analyzing the competitive effects of the Proposed Transaction.

61. The High-Performance Video Game Consoles market includes only Microsoft’s Xbox Series X|S consoles and Sony’s PlayStation 5 consoles. The market excludes other video game consoles, including the Nintendo Switch (released in 2017), as well as PCs, mobile devices, virtual reality (“VR”) devices, and non-console cloud gaming.

62. Evidence supports the conclusion that Xbox Series X|S and PlayStation 5 consoles compete more closely with each other than with the Nintendo Switch.



63. First, all three major console manufacturers have made statements consistent with this conclusion:

- In *Epic Games, Inc. v. Apple Inc.*, Lori Wright, Vice President of Business Development for Gaming, Media, and Entertainment at Microsoft, testified that “[t]he most direct competitor for [Xbox console] hardware sales would be the Sony PlayStation” and the Nintendo Switch competes with Xbox for hardware sales “but to a much lesser extent.”<sup>44</sup>
- In a declaration submitted in this matter, SIE CEO Jim Ryan indicated, “While PlayStation competes with non-console devices and the Nintendo Switch, at present, PlayStation’s closest competitor in gaming is Microsoft’s Xbox.”<sup>45</sup>
- According to Tom Prata, Executive Vice President of Product Development and Publishing for Nintendo of America, “offerings developed by Nintendo that take advantage of [its] integrated [hardware and software] approach are commonly distinguished by video game users and the industry from offerings on Microsoft’s Xbox consoles and Sony’s PlayStation consoles.”<sup>46</sup>

64. Second, there is substantial evidence that [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED].<sup>47</sup> This evidence that [REDACTED]

[REDACTED] strongly supports the conclusion that substitution to products *outside* of the High-Performance Video Game Consoles market is not so high that a SSNIP would not be

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<sup>44</sup> PX6000 (Testimony of Lori Wright, *Epic Games Inc. v. Apple Inc.*, 559 F.Supp.3d (N.D. Cal. May 5, 2021), 537:16–19).

<sup>45</sup> PX8001 at -004–005 (Declaration of Jim Ryan, Dec. 5, 2022).

<sup>46</sup> PX8002 at -001 (Declaration of Tom Prata, Dec. 7, 2022).

<sup>47</sup> PX1635 at -001–002 (email correspondence, Jul. 2020); PX1752 at -001 (email correspondence, Aug. 2022); [REDACTED]

[REDACTED]

profitable for a hypothetical monopolist of high-performance video game consoles. The reason is that if substitution to products *outside* of the High-Performance Video Game Consoles market were substantial, then price changes on PlayStation 5 consoles would not significantly relax the pricing constraints on Xbox Series consoles, and vice versa.

65. Third, [REDACTED] .<sup>48</sup>

66. Fourth, evidence indicates that Xbox Series X|S and PlayStation 5 consoles are differentiated from the Nintendo Switch with respect to performance, form factor, technical specifications, pricing, and game availability.

67. The Xbox Series X|S and PlayStation 5 consoles have similar technical specifications,<sup>49</sup> and Microsoft and Sony regard them as the most powerful video game consoles available today.<sup>50</sup> Xbox executive Liz Hamren has indicated that “broad consumer audiences will likely perceive the Xbox Series X and PS5 as roughly comparable.”<sup>51</sup> Nintendo, on the other hand, according to the testimony of Activision CFO Armin Zerza, has “very different capabilities than Microsoft and Sony has. . . Nintendo is not at the forefront of technology.”<sup>52</sup>

68. While the Xbox Series X|S and PlayStation 5 consoles are home consoles typically played on television screens, the Nintendo Switch is a “hybrid console” that can as also be used as a handheld console. Microsoft’s Vice President of Xbox Game Marketing, Aaron

<sup>48</sup> PX1747 at -009, -020 (email correspondence and attachment, Aug. 2022); PX1887 at -001 (email correspondence, Nov. 2022); PX7028, Deposition of Phil Spencer, Mar. 8, 2023 [hereinafter “Spencer Depo. Tr.”] at 144:16–145:13; PX1240 at -019 (Xbox internal presentation, May 2021); PX5000 at -088 (Expert Report, ¶ 208).

<sup>49</sup> PX5000 at -080 (Expert Report, Figure 13).

<sup>50</sup> PX5000 at -075 (Expert Report, ¶ 189). Many video game media outlets have also compared the head-to-head performance of the Xbox Series X and PlayStation 5 consoles. PX5000 at -075 (Expert Report, n. 392). *See also* PX1635 at -002 (email correspondence, Jul. 2020).

<sup>51</sup> PX1275 at -001–002 (email correspondence, Mar. 2020); PX1635 at -002 (email correspondence, Jul. 2020) [REDACTED]

<sup>52</sup> PX7004, Investigational Hearing of Armin Zerza, Sep. 8, 2022 at 74:2-14.

Greenberg, acknowledged the difference in an internal email, writing “I would also suggest in general we try to avoid calling Switch a console, as it is really a portable gaming device.”<sup>53</sup>

69. Xbox Series X|S and PlayStation 5 consoles have video game content portfolios that are more similar with each other than with the Nintendo Switch. The majority of sales for Xbox Series X|S and PlayStation 5 are of titles that are available on both Xbox and PlayStation consoles but not on the Nintendo Switch. By comparison, over 70% of game sales for the Nintendo Switch are from titles that are exclusive to the Switch.

70. Other video game consoles would likely not constrain a hypothetical monopolist of high-performance video game consoles from profitably imposing a SSNIP.<sup>54</sup>

71. PCs, both laptop and desktop computers and those configured to play computationally demanding games (“Gaming PCs”), are significantly differentiated from video game consoles such that PCs are unlikely to constrain a hypothetical monopolist of high-performance video game consoles from profitably engaging in a SSNIP. PCs are multipurpose devices whereas video game consoles are primarily designed to play games. Also, a 2022 Xbox Cloud Gaming document states that “PC and mobile gamers make up a large majority of gamers worldwide and their desires and play styles do not naturally align to the console,”<sup>55</sup> while a Sony internal presentation states [REDACTED]

[REDACTED].<sup>56</sup> Gaming PCs are also typically much more expensive than video game consoles. The same 2022 Xbox Cloud Gaming document noted, “Historically,

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<sup>53</sup> PX1950 at -001 (email correspondence, Aug. 2019).

<sup>54</sup> PX5000 at -090 (Expert Report, ¶ 215).

<sup>55</sup> PX4182 at -004 (Xbox Cloud Gaming document, Sep. 2022).

<sup>56</sup> [REDACTED] *See also* PX1476 at -001 (email correspondence, Aug. 2021).

the \$500 Xbox [console] has been designed to compete with a ~\$1500 PC on gameplay performance.”<sup>57</sup>

72. In addition, industry use of the term “exclusivity” pertaining only to console exclusivity, such that games are considered exclusive if they are available for PC in addition to consoles, is also consistent with video game consoles and PCs being significantly differentiated.<sup>58</sup> Both Sony and Microsoft have released “exclusive” titles to their respective consoles *and* PCs.<sup>59</sup>

73. Mobile devices (including mobile phones and computer tablets), VR gaming devices, and cloud gaming services accessed on non-console devices are significantly differentiated from video game consoles and would likely not constrain a hypothetical monopolist of all high-performance video game consoles from profitably implementing a SSNIP.<sup>60</sup>

74. As a complementary tool in performing the HMT, I also conducted what economists refer to as critical loss analysis. Based on this analysis, under assumptions I detail in my Expert Report, I calculated that a 5% SSNIP would be profitable for a hypothetical monopolist as long as *at least* 6.2% of consumers who stop purchasing an Xbox Series console

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<sup>57</sup> PX4182 at -004 (Xbox Cloud Gaming document, Sep. 2022). *See also* PX1145 (email correspondence, Dec. 2020) (High performance consoles, including Xbox Series X|S, are sold below cost); PX1324 at -001 (email correspondence, Feb. 2019).

<sup>58</sup> PX7014, Investigational Hearing of Matthew Booty, Oct. 5, 2022 [hereinafter “Booty IH Tr.”] at 94:2–95:18. (“Q. [Y]ou would say that ... Halo Infinite is exclusive even though it’s on other platforms we just mentioned? A. Well, this gets to what my point was is that exclusivity has to be tied to something. So, it is exclusive to our console. But, for example, on PC it is available through Steam, which is run by Valve. So, you know, we need to make a distinction there. Q.... So, when you say exclusive on your console, you mean that it’s available on Xbox consoles, but not competitor consoles; is that right? A. Correct.”). *See also* PX7025, Deposition of Brad Smith, Mar. 2, 2023 at 21:18–22:3 (“Q. Okay. And when you said in that sentence, Xbox at the end, exclusive to Xbox. What does Xbox mean there? A. ... I would say that Xbox in this context most properly refers to the Xbox console and any Xbox service such as our service on PCs and elsewhere.”).

<sup>59</sup> PX5000 at -095–096 (Expert Report, ¶¶ 228–229, Figure 19).

<sup>60</sup> PX5000 at -097–100 (Expert Report, §§ IV.B.1.f–h).

following a SSNIP on Xbox consoles would purchase a PlayStation 5 console, and vice versa.<sup>61</sup>

The evidence presented above indicates that substitution between the Xbox Series X|S and PlayStation 5 consoles likely exceeds this threshold.

75. Together, the qualitative and quantitative evidence indicates that Microsoft and Sony impose the most significant competitive constraints on one another among video game console manufacturers, and that a hypothetical monopolist of high-performance video game consoles likely would implement a SSNIP. For this reason, I concluded that the High-Performance Video Game Consoles market satisfies the HMT and is a relevant product market.

#### **IV.A.2. Video Games Consoles**

76. *Video Game Consoles* is a relevant product market, albeit broader than is necessary to satisfy the HMT, for analyzing the competitive effects of the Proposed Transaction. The Video Game Consoles market consists of consumer devices that are designed and whose primary use is to play video games. The market includes the Xbox Series X|S, PlayStation 5, and Nintendo Switch consoles, as well as other home video game consoles and handheld consoles.<sup>62</sup>

77. Because the Video Game Consoles market wholly contains all products in the High-Performance Video Game Consoles market, any competitive effects of the Proposed Transaction that would occur in the High-Performance Video Game Consoles market would also occur in the broader Video Game Consoles market. So even if the narrower High-Performance

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<sup>61</sup> Under additional assumptions, a SSNIP of at least 5% would be profit maximizing for a hypothetical monopolist as long as *at least* 11.6% of consumers who stop purchasing an Xbox Series console following a SSNIP on Xbox consoles would purchase a PlayStation 5 console, and vice versa. The difference between the thresholds arises due to differences in the size of the price increase that a hypothetical monopolist would find *profitable* to do, as opposed to *optimally* do. I also compute these percentages for a SSNIP to be profitable (7.7%) or profit maximizing (14.3%) using 20% lower price-cost margins than those I estimate from Microsoft data.

<sup>62</sup> Consoles that do not currently have Activision content and are unlikely to have Activision content regardless of whether the merger occurs are less salient for the purposes of analyzing potential competitive harm arising from the foreclosure of Activision content. This is because their software libraries are unlikely to be directly affected by the merger, and such consoles will be less effective substitutes for consumers switching away from a product that has Activision content withdrawn from or degraded on it than a product which does have Activision content. That said, in the interest of completeness, I include such devices in my discussion here.

Video Game Consoles market were not defined as a relevant product market, my main conclusions regarding likely competitive harms in the broader Video Game Consoles market (which includes consoles from Microsoft, Sony, and Nintendo) would not be affected.

78. In the previous section, I presented evidence that the High-Performance Video Game Consoles market satisfies the HMT and is a relevant product market. Because all products in the High-Performance Video Game Consoles market are wholly contained within the Video Game Consoles market, this same evidence implies that the Video Game Consoles satisfies the HMT as well.<sup>63</sup> For additional evidence that market participants consider video game consoles as a product segment distinct from non-console gaming options, see my Expert Report, § IV.B.2.<sup>64</sup>

79. The combined qualitative and quantitative evidence supports the conclusions that a hypothetical monopolist of video game consoles would likely implement a SSNIP, and that the Video Game Consoles market satisfies the HMT and is a relevant product market.

#### **IV.A.3. Geographic market**

80. The United States is a relevant geographic market for both the High-Performance Video Game Consoles market and the Video Game Consoles market.

81. According to the 2010 Department of Justice and FTC Horizontal Merger Guidelines, “[t]he arena of competition affected by the merger may be geographically bounded if geography limits some customers’ willingness or ability to substitute to some products, or some suppliers’ willingness or ability to serve some customers.”<sup>65</sup>






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<sup>63</sup> The hypothetical monopolist of the Video Game Consoles market would own strictly more products than the hypothetical monopolist of the High-Performance Video Game Consoles market, and hence would also likely impose a SSNIP on at least one product in this broader market (e.g., Xbox Series consoles).


<sup>64</sup> PX5000 at -102–104 (Expert Report, § IV.B.2).

<sup>65</sup> Department of Justice and Federal Trade Commission, Horizontal Merger Guidelines, Aug. 19, 2010 § 4.2.

82. Evidence indicates that customers do not view purchasing video game consoles in another country as a reasonable substitute for purchasing video game consoles in the United States, and console manufacturers treat the United States as a distinct geographic market.

83. First, video game console manufacturers make pricing and release decisions that can vary on a country-by-country basis, which supports the conclusion that video game console manufacturers are able to *price discriminate* among consumers by geography. For example, Sony announced in August 2022 an increase in prices for PlayStation 5 consoles in select countries, including Canada, but not in the United States.<sup>66</sup> In response to an email thread discussing Sony’s price increase announcement, Microsoft CEO Satya Nadella wrote, “  
  
.”<sup>67</sup>   
.<sup>68</sup>

84. Second, evidence indicates that market participants analyze competition on a country-by-country basis.<sup>69</sup> For example, in a 2021 email asking about the “the share difference between PlayStation and [Microsoft] in this generation right now in the US,” Satya Nadella, CEO of Microsoft, refers to the 

”<sup>70</sup> And, Microsoft Gaming CEO Phil Spencer, in describing a 2022

<sup>66</sup> PX5000 at -104 (Expert Report, ¶ 259).

<sup>67</sup> PX1752 at -001 (email correspondence, Aug. 2022).

<sup>68</sup> PX5000 at -104 (Expert Report, ¶ 259).

<sup>69</sup> See PX7026, Deposition of David Hampton, Mar. 2, 2023 at 177:11–178:3, 178:23–179:11 (“There are games that just are built in those geographies, grown in those geographies that never make it to the west, and they just don’t have ... the same interest in things, like, you know, Halo that American players do.”). See also PX7053, Ryan Depo. Tr. (Vol. I) at 15:6–16:2; PX1571 at -029 (email correspondence and attachment, Apr. 2021); PX1563 at -045–048 (email correspondence and attachment, May 2022).

<sup>70</sup> 

meeting with the Microsoft Board of Directors, wrote, “I next hit our share position relative to Sony. ... I explained our biggest share miss was in the US[.] ... Given US is roughly [REDACTED] of our business missing share in US impacts [worldwide fiscal year] share dramatically.”<sup>71</sup>

85. Third, evidence indicates that console video games—which are complementary products to consoles—are sold on a regional and country-by-country basis as well.<sup>72</sup>

86. The combined evidence supports the conclusion that the United States is a relevant geographic market for the Consoles Markets.

#### **IV.B. Ability and incentive to foreclose in the Consoles Markets**

87. Having defined the High-Performance Video Game Consoles and Video Game Consoles markets, I evaluate whether the Merged Entity would have the *ability* and *economic incentive* to foreclose Microsoft’s rivals from Activision content in the two Consoles Markets.

##### **IV.B.1. Ability**

88. The Merged Entity would have the *ability* to foreclose Microsoft’s rivals in each of the Consoles Markets from Activision content. As discussed above, withholding Activision content from, or partially foreclosing or degrading Activision content to, Microsoft’s rivals would meaningfully affect their competitiveness and consumer demand for their products.

89. The Merged Entity would also have access to various viable foreclosure strategies,<sup>73</sup> including withholding the content entirely and different forms of partial exclusivity.

<sup>71</sup> PX1887 at -001 (email correspondence, Nov. 2022).

<sup>72</sup> See, e.g., PX4647 at -001 (email correspondence, Mar. 2021) (“There is a lot of work going on towards having the right regional pricing, and we were intentionally aggressive in some regions. ‘We’ made the choice not to create price disparity in our core Euro markets.”); PX1563 at -002 (email correspondence and attachment, May 2022) (listing North America among five different geographic regions).

<sup>73</sup> [REDACTED] PX1015 at -027 (email correspondence and attachment, Mar. 2020). See also PX4505 at -002 (email correspondence, Jul. 2019) (Microsoft email discussing exclusive content and bundles, noting that having a game with exclusive “extras” “enhances it, likely securing the deal” when influencing consumers’ console choice.).



Examples of partial exclusivity or partial foreclosure strategies that would be available to the Merged Entity include:

- *Timed exclusivity*, where the Merged Entity delays release of first-party content on rival products;
- *Content exclusivity*, where the Merged Entity makes downloadable content, early “beta” (test) versions of games, or other add-on content exclusive to Xbox products; and
- *Degraded or non-optimized content*, where the Merged Entity degrades game performance, gameplay, or features of first-party games on rival products (potentially through reduced investment in console-specific improvements).<sup>74</sup>

#### **IV.B.2. Incentive**

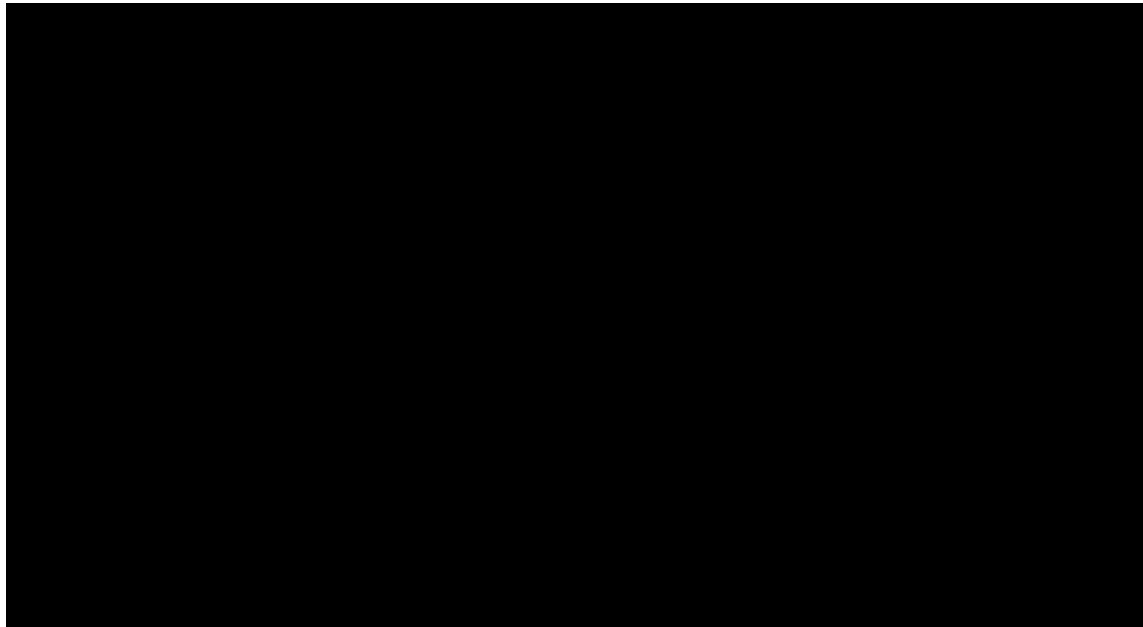
90. First, the Merged Entity would have a *greater economic incentive* to engage in foreclosure of Microsoft’s rivals than an independent Activision in the Consoles Markets.

91. The primary costs to Activision of foreclosing its content from Sony PlayStation are lost or reduced sales of its games on PlayStation consoles. Some of these lost sales can be offset if consumers substitute and purchase Activision content on other devices. However, in contrast to an independent Activision, the Merged Entity would also account for Microsoft’s profits earned on additional console and gaming service sales when PlayStation is foreclosed. Since the Merged Entity internalizes Activision *and* Microsoft’s combined incentives, it would have a greater economic incentive to engage in foreclosure than an independent Activision.

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<sup>74</sup> See, e.g., PX2049 at -004, 006 (Activision Blizzard internal presentation) [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

**Figure 4: Costs and benefits of console exclusivity considered by Microsoft**



Source: PX4670 at -004 (Microsoft internal presentation, Nov. 2019).

92. There is evidence that Microsoft acknowledges such benefits from taking content exclusive. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]<sup>75</sup>

93. Microsoft also may realize *additional benefits*, some of which may occur over a longer time frame, from content foreclosure of rival consoles. For example:

- Microsoft executives and documents acknowledge that consumers' beliefs and expectations are affected by the type and amount of exclusive content on Xbox,<sup>76</sup> such

<sup>75</sup> PX1828 at -005 (email correspondence and attachment, Nov. 2019).

<sup>76</sup> According to Microsoft Corporate Vice President of Game Creator Experience and Ecosystems Sarah Bond, "There are a set of players that value the idea that they can play [a] game only on Xbox. ... [T]hey want validation of their choice of buying Xbox and they consider the idea that they can only play the game at Xbox to be a source of validation." PX7003, Bond IH Tr. at 54:1–55:18; According to Matt Booty, "the owners of game consoles put importance on exclusive content." PX7014, Booty IH Tr. at 186:6–187:8.

that more and higher quality exclusive content likely would lead to greater sales of consoles and complementary products for Microsoft.<sup>77</sup>

- If fewer users purchase Activision content on PlayStation, Sony would lose its share of the revenue on those sales and post-sales monetization. This would make console sales less profitable to Sony, potentially leading to lower subsidies and higher prices for its consoles, driving even more sales to Microsoft.
- Worsening the quality of rival consoles tends to weaken the competition faced by Microsoft, which enhances Microsoft's market power and ability to increase prices.

94. In addition to concluding that the Merged Entity will have a greater economic incentive to foreclose Microsoft's rivals in the Consoles Markets, I relied on qualitative and quantitative evidence to conclude that Microsoft *would likely have the economic incentive to engage in foreclosure of Activision content in the Consoles Markets.*

95. There is significant evidence, including evidence discussed above, that Microsoft considers the benefits of foreclosing rivals from content when deciding whether to make content exclusive for its consoles. Such benefits, which accrue to Microsoft's overall gaming business and may take time to realize, appear in some cases to be large enough that Microsoft is willing to sacrifice significant profits and revenues on the sales of video game content.<sup>78</sup>

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<sup>77</sup> For example, ██████████ show that █% (██████████ users) of US gamers who played Call of Duty on PlayStation 4 during or after November 2020 have not played any title on a PlayStation 5 (the corresponding figure globally is █% or ██████████). These are consumers with an observed preference for Call of Duty and who may be considering a new Generation 9 console (since they have played only on a PlayStation 4, not a PlayStation 5). The console purchasing decision of these Call of Duty gamers would likely be based in part on their expectations regarding future availability—or foreclosure—of Activision titles including Call of Duty on PlayStation consoles.

<sup>78</sup> See also PX4484 at -020–021 (email correspondence and attachment, Feb. 2022) ██████████  
██████████; PX1471 at -024–025 (email correspondence and attachments, Jun. 2021).

96. First, Microsoft executives have acknowledged that Microsoft is willing to lose money on first-party exclusive titles and treat them as a “loss leader” to increase sales of Xbox consoles and Game Pass.<sup>79</sup>

97. Second, Microsoft’s discussion and actions surrounding proposed and consummated acquisitions of video game studios, described above and in my Expert Report, are consistent with Microsoft’s willingness to forgo profits on content sales to obtain benefits arising from content exclusivity, and the benefits of exclusivity outweighing the foregone sales on other gaming platforms.<sup>80</sup>

98. In general, the economic costs and benefits that Microsoft faces from taking content exclusive are case-specific and depend on, among other things, the sales that would be lost on foreclosed consoles and how many additional Xbox consoles would be sold in the event of foreclosure. For example, the economic incentives to engage in foreclosure for *Minecraft*—a game that is available on Xbox, PlayStation, and Nintendo consoles; Windows, Chromebook, Mac, and Linux PCs; and iOS and Android mobile devices—are likely very different than for Activision content such as *Call of Duty*, which is only available on Xbox and PlayStation consoles and Windows PCs. If Microsoft completely foreclosed PlayStation from *Call of Duty*, PlayStation users would only have two alternative options—Xbox consoles and Windows PCs—to choose from to continue playing. However, if Microsoft completely foreclosed PlayStation

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<sup>79</sup> A 2020 email chain involving Microsoft Gaming CEO Phil Spencer and members of the Gaming Leadership Team, a member of Microsoft’s Office of the Chief Economist responded to an email from Mr. Spencer, noting, [REDACTED]

[REDACTED] PX4007 at -006 (email correspondence, Jul. 2020). In a later email on the same chain, Mr. Spencer wrote that this was also the case for consoles: “I’m fine investing 1P in XGP, **we do that on console already by making the games for a subset of available hardware (basically skipping [PlayStation] and Switch)** so investing in XGP with 1P feels similar” (emphasis added). PX4007 at -005 (email correspondence, Jul. 2020).

<sup>80</sup> See PX5000 at -193–205 (Expert Report, § VII.C.1).

from *Minecraft*, PlayStation users would have many more devices to choose from to continue playing the game (and would also more likely already own such a device). Hence, foreclosure of *Minecraft* from PlayStation would likely lead to a lower fraction of users affected by the foreclosure purchasing a new Xbox console than would foreclosure of *Call of Duty*, which would tend to reduce the benefits from engaging in foreclosure.

99. Recall that ZeniMax titles such as *Starfield* and *Redfall* were originally planned to be released on Xbox, PlayStation, and PCs; these titles were taken exclusive to Xbox and PCs following Microsoft's acquisition of ZeniMax.

#### **IV.B.2.a. Vertical Foreclosure model**

100. To examine the Merged Entity's economic incentives to withhold Activision content from Sony's PlayStation consoles, I developed a quantitative economic model (henceforth, "Vertical Foreclosure model") that compares the costs and benefits that would accrue to the Merged Entity were it to engage in such foreclosure.

101. The model is conceptually similar to the one used by Microsoft to analyze the costs and benefits of ZeniMax title exclusivity.<sup>81</sup> The Vertical Foreclosure model focuses on changes in the profits of Microsoft and Activision when titles are withheld from PlayStation consoles. It uses projected sales of content on PlayStation to predict the number of *affected users* who, in the absence of foreclosure, would have played the foreclosed content on PlayStation, and models these players' subsequent choices. For a single title, the profits earned by Activision from these players on PlayStation represent *costs* to the Merged Entity from withholding the title from PlayStation and forgoing sales on PlayStation. The analysis predicts the fraction of those players

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<sup>81</sup> PX4484 (email correspondence and attachment, Feb. 2022). The results of this analysis were presented to members of the Microsoft Gaming Leadership Team. PX1966 at -001 (chat transcript, Feb. 2021). "Project Neutrino" considered five scenarios, [REDACTED] PX4484 at -011 (email correspondence and attachment, Feb. 2022).

that would instead choose to play the Activision title on Xbox consoles or PCs when it is withheld from PlayStation. The profits earned by Microsoft and Activision from these players who would have played the title on PlayStation but would play instead on Xbox consoles or PCs in the event of foreclosure represent recouped *benefits* to the Merged Entity.

102. Quantitative models meant to simulate future outcomes will not—by their very nature—capture every nuance, uncertainty, and complexity of reality. Despite their limitations, quantitative models can provide useful information relevant to evaluating the Merged Entity’s *incentives* to engage in foreclosure, and hence the likelihood of foreclosure. When possible, I relied on quantitative values of inputs into the model that are supported by my own analyses of the data available in the record of this case. I also, where appropriate, referred to values and sources used by Microsoft when conducting its economic modeling in the ordinary course of business, adjusting if necessary to account for more recent information or the specifics of this transaction. Where there are greater uncertainties, I aimed to be conservative in my approach (i.e., erring on the side of finding foreclosure to not be profitable) and considered findings across a range of inputs to inform my economic opinions.

103. The results of the Vertical Foreclosure model depend on two key quantitative inputs: the customer lifetime value (“LTV”) of purchasers of Xbox consoles and the “Xbox conversation rate.” The Xbox conversion rate refers to the fraction of “potential Xbox purchasers”—defined as affected users who (i) do not already own an Xbox console and (ii) would not choose to play the foreclosed Activision content on PC—that would purchase an Xbox console to play the foreclosed Activision content. In both cases, I used conservative values for these inputs in the baseline specification of my model and considered predictions of the model under a range of values for these inputs.

104. As to the first input, LTV is the effective lifetime profit earned by the console manufacturer from a customer who purchases a console. The LTV for a new Xbox Series user (known as New-to-Xbox, or “NTX”) consists of profits from game, accessory, and gaming service sales and accounts for selling consoles below cost. [REDACTED]

[REDACTED]

105. Another reason the adjustment is likely to be conservative is that while the Vertical Foreclosure model only accounts for the first five years of profits earned by Microsoft from an Xbox console sales (“5-year LTV”), the most recent LTV data produced by Microsoft indicate that Microsoft earns significant profits from console sales after five years: [REDACTED]

[REDACTED]

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<sup>82</sup> Further, my own independent analysis of Microsoft telemetry data showed significant spending on content by purchasers of Xbox One (Microsoft’s Generation 8 console) after the first five years, which is consistent with Microsoft earning significant profits on NTX users after five years. [REDACTED]

106. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]<sup>83</sup> [REDACTED]

[REDACTED]

[REDACTED]<sup>84</sup> [REDACTED]

[REDACTED]

[REDACTED]

107. The model also *omits several additional benefits* that would tend to further offset Activision’s losses and thereby increase the Merged Entity’s incentive to engage in foreclosure even further. Additional benefits include:

- Additional consumers who would not have played Activision content might purchase an Xbox console if, as a result of foreclosure, their beliefs and expectations regarding the Xbox brand and the availability and quality of content on Xbox consoles improves, while their perceptions regarding PlayStation’s future content availability worsen.
- Affected users who would have multi-homed across PlayStation and Xbox consoles shifting some or all of their non-Activision PlayStation gaming to Xbox consoles, which

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<sup>83</sup> PX5000 at -023 (Expert Report, ¶ 57).

<sup>84</sup> PX1136 at -004 (email correspondence and attachments, Nov. 1, 2019).



can occur if those users (i) prefer to consolidate their gaming on a single device or (ii) no longer purchase a PlayStation console and only play on Xbox.

- Enhanced Microsoft market power due to weakened competition from PlayStation, enabling Microsoft to profitably levy higher prices on consoles, subscription services, and other gaming products or reduce investments in product quality and innovation.

108. Considering only the costs and benefits contained within the model and for a given set of inputs, the Merged Entity would have the incentive to withhold a video game title from PlayStation if the percent of lost profits recouped exceeds 100%. Because of the additional benefits from foreclosure that are not captured by the model, the Merged Entity could still find it profitable to withhold a title even if the recoupment predicted by the model were less than 100%.

109. The baseline specification of the model (using likely conservative inputs) predicts that, by withholding *CoD25*, the Merged Entity would ██████████ in profits from forgone sales on PlayStation consoles, but would ██████████ in profits from game sales and post-sales monetization on Xbox consoles and PCs as well as from additional sales of Xbox consoles and Game Pass subscriptions. This represents a ██████████.

110. I also considered the Merged Entity's incentive to withhold a non-*Call of Duty* title, as Activision has multiple successful franchises. For this analysis, I analyzed the Merged Entity's incentive to withhold *Diablo IV*, as it is the only other non-mobile non-free-to-play game contained in the profit projections used for the model. The baseline specification of the model (using likely conservative inputs) predicts that, by withholding *Diablo IV*, the Merged Entity would ██████████ in profits from forgone sales on PlayStation consoles, but would ██████████ in profits from game sales and post-sales monetization on Xbox consoles

and PCs, as well as the profits earned on additional sales of Xbox consoles and Xbox Game Pass subscriptions. This represents a [REDACTED].

111. The results of the model across a wide range of specifications and inputs indicate that the Merged Entity would likely have an *economic incentive* to withhold new Activision content, both *Call of Duty* and non-*Call of Duty* titles, from Sony PlayStation consoles. This is even under conservative inputs and without accounting for likely meaningful benefits outside of the model.

112. The combined qualitative and quantitative evidence presented above supports the conclusion that the Merged Entity would likely have the economic incentive to foreclose Activision content in the Consoles Markets.

#### **IV.C. Harm to competition and consumers from foreclosure**

113. After finding that the Merged Entity would have the ability and likely economic incentive to foreclose Microsoft's rivals in the Consoles Markets, I evaluated the likely harm arising from foreclosure in these markets compared to a world where the merger does not occur (the "**but-for world**").

114. Relative to the "but-for world" without the merger in which Activision remains independent and Activision content remains available on multiple video game consoles, the Proposed Transaction would likely lead to foreclosure of Activision content in the Consoles Markets, generating competitive and consumer harm arising from less content or degraded content on Sony PlayStation consoles, and leading to lower-quality or higher-priced products and reduced consumer choice. Withholding or degrading Activision content would lead to a less attractive game catalog on PlayStation consoles and eliminate options for devices that consumers could use to play the foreclosed games. Furthermore, Sony's effective increase in costs resulting

from losing revenue on Activision content and weakened competition faced by Microsoft would tend to lead to higher prices.

115. Microsoft has acknowledged the potential harm to consumers that can occur from exclusivity (and benefits to consumers from making content more widely available).<sup>85</sup> For example, in a September 2019 email, Microsoft Gaming CEO Phil Spencer stated, with respect to content exclusivity secured by Sony, “I’ve received a ton of negative feedback on Sony signing exclusive content for [Call of Duty] and [Civilization VI] effectively paying so Xbox and PC gamers don’t get what [PlayStation 4] customers get. ... [I]t is another example where Xbox gamers who pay attention feel like they are yet again being punished for making the wrong console choice.”<sup>86</sup> Microsoft choosing to foreclose its rivals in the Console Markets by withholding or degrading Activision content would also effectively “punish” gamers on other consoles and tend to harm competition in these markets.

#### **IV.C.1. Quantitative estimate of harm**

116. To provide a quantitative estimate of the harm that would arise as a result of a reduction in the quality of Sony PlayStation consoles if Activision content were foreclosed, I calibrated an economic model of consumer demand for video game consoles in the United States to simulate how Xbox and PlayStation console unit sales and prices would adjust if PlayStation 5 consoles suffered a quality reduction arising from content foreclosure (henceforth, “Harm

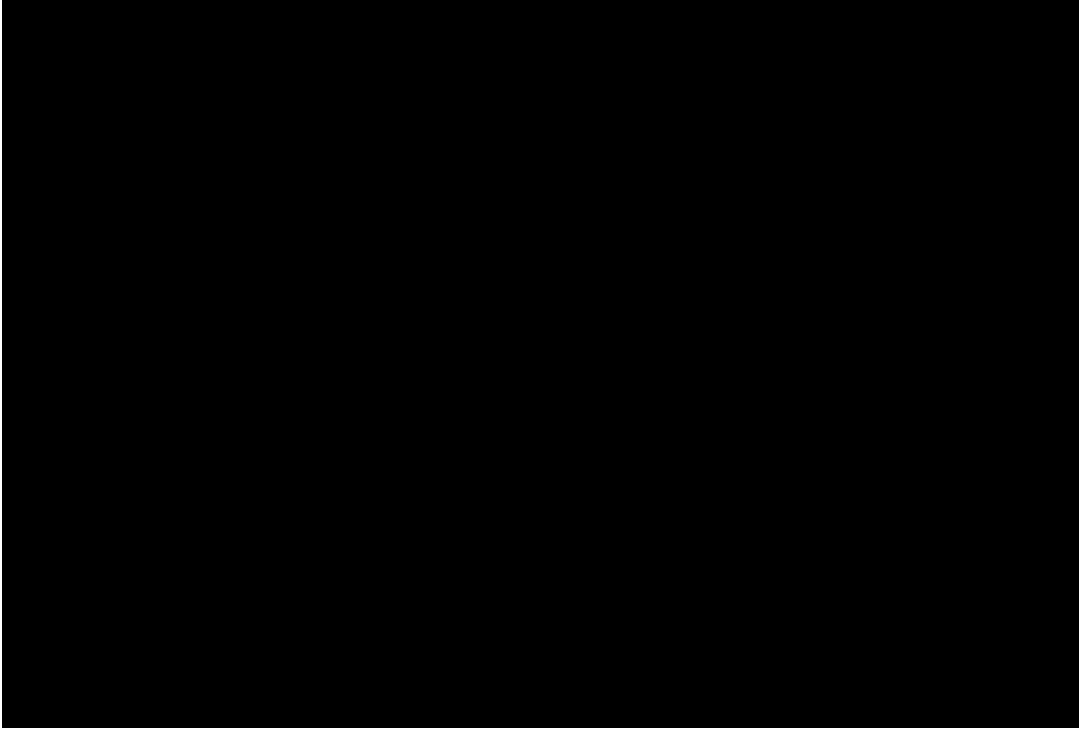
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<sup>85</sup> PX4476 at -008 (Microsoft Corporation’s Responses and Objections to Complaint Counsel’s First Set of Interrogatories, Mar. 24, 2023) (“Since 2015, Sony has contracted with Activision for preferential treatment of *Call of Duty* gamers who use its PlayStation consoles to play the game, a practice that Microsoft seeks to eliminate following the acquisition of Activision. As a result of Sony’s practice, gamers who use other platforms (currently Xbox and PC) are not able to access certain PlayStation-exclusive *Call of Duty* content. Post-Transaction, Microsoft’s goal is that Xbox and PC gamers will be able to enjoy the benefits currently reserved for PlayStation gamers.”); PX4476 at -008–009 (Microsoft Corporation’s Responses and Objections to Complaint Counsel’s First Set of Interrogatories, Mar. 24, 2023) (“Expanding access to *Call of Duty* to Nintendo will give gamers more choice and will increase the pool of cross-play gamers overall, enhancing the gaming Nintendo experience for all *Call of Duty* gamers, regardless of the device they use to access the game.”).

<sup>86</sup> PX4629 at -001 (email correspondence, Sep. 2019).

model”). The Harm model is conservative by not accounting for longer-term harms arising from foreclosure, including any reduction in innovation.

**Figure 5: Change in PlayStation 5 quality from making Activision content exclusive to Xbox for different resulting changes in Xbox Series X|S market share**



Source: PX5000 at -233 (Expert Report, Figure 52).

117. Figure 5 shows the quality reduction in PlayStation consoles (expressed in dollar terms) that would yield a share change in Xbox Series X|S from 0 to 10 percentage points, holding prices of these consoles fixed. Results from my Share model (para. 31, above) indicated that Xbox One’s share relative to PlayStation 4 would increase by ■ percentage points, on average, if *Call of Duty* were removed from PlayStation 4. The Harm model estimates that an ■ percentage point increase in Xbox Series share is equivalent to a reduction in PlayStation 5 console’s quality, expressed in dollar terms, of ■■■■■.<sup>87</sup> This implies that predicted harm

<sup>87</sup> The exact depends on the value of “nesting parameter,” which refers to the extent to which Xbox Series and PlayStation 5 consoles are substitutable. This parameter measures closeness of substitution between products, and

from this quality reduction is substantial for consumers who continue to purchase a PlayStation 5. Consumers who substitute to purchasing an Xbox Series X|S console from the PlayStation 5 in response to the foreclosure will also tend to be harmed, as they would be purchasing a console that they had, absent foreclosure, preferred less.

118. I also simulated the Harm model allowing prices to adjust following foreclosure. Among all of the scenarios I considered, Microsoft responds by increasing its price, while PlayStation responds by decreasing its price, but not by enough to offset the decrease in PlayStation 5 quality. Hence, every purchaser of Microsoft consoles is also harmed due to the increase in its price arising from the weakening of competition. These results also do not account for the increase in Sony's effective marginal costs from losing revenues from foreclosed Activision content, and hence likely understate price increases and harm to consumers.

119. The Harm model also demonstrates that **even if foreclosure brought Sony and Microsoft's market shares closer together and reduced market concentration, competition and consumers can still be harmed.**<sup>88</sup>

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may take values from 0 (distant substitutes) to 1 (perfect substitutes). In this case, when the nesting parameter is closer to 0, Xbox Series X|S and PlayStation 5 consoles are relatively more distant substitutes for one another; when the nesting parameter is close to 1, the two consoles are relatively closer substitutes for one another. Because the actual nesting parameter between Xbox and PlayStation is uncertain from the data I was provided, I therefore simulated the model for a range of nesting parameters and present results in Figure 5 for nesting parameters of 0.3, 0.6, and 0.9. This captures a wide range of potential customer substitution patterns. A nesting parameter of 0.3 implies that about 24% of customers departing Xbox in response to a price increase would substitute to a PlayStation 5; a nesting parameter of 0.6 implies that about 49% of customers would substitute to a PlayStation 5; and a nesting parameter of 0.9 implies that about 85% of customers would substitute to a PlayStation 5.

My Share model estimated that removing a top-selling non-*Call of Duty* Activision title from PlayStation 4 resulted in, on average, a [REDACTED] pp increase in Xbox One's share in the first year after the title's release. For a [REDACTED] pp increase in Xbox Series X|S share, the implied decrease in PlayStation 5 quality is equivalent to a \$ [REDACTED] increase in its price depending on the value of the nesting parameter.

<sup>88</sup> For intuition, consider a hypothetical market in which there are two firms selling differentiated products, and market shares are 70% and 30%. Suppose the smaller firm can engage in an action that improves the quality of its own product, or engage in an action that only harms the quality of its rival. Say both actions would result in bringing market shares closer together—for instance, to 50-50—and reduce market concentration. Clearly, the implications for consumer and competitive harm are different depending on which action the smaller firm chooses. In particular, if the smaller firm's increase in its market share is achieved by harming its rival without any increase in its own quality, then the act would likely lead to fewer products sold and harm consumers and competition.

#### IV.C.2. Entry

120. Evidence indicates that entry into Consoles Markets is unlikely to be timely, likely, or sufficient to reverse the likely harm of the Proposed Transaction.

121. First, meaningful entry into the Consoles Markets is uncommon. The Merging Parties have represented that “following the launch of the first Xbox console in 2001, Microsoft has been one of the three main global console providers.”<sup>89</sup>

122. Second, entry is expensive. Microsoft has represented that “[g]aming consoles are generally costly to develop. ... [T]he cost to develop and produce a gaming console continues to increase.”<sup>90</sup>

123. Third, to be successful, consoles must offer an attractive catalog of content. As discussed earlier in my declaration, valuable content is scarce and there are limited and likely insufficient alternative options for entrant console manufacturers to replace the impact and attractiveness of Activision content in their gaming catalogs if they are foreclosed.

#### IV.D. Potential pro-competitive effects

124. Defendants’ economic experts asserted three categories of potential “merger-specific efficiencies” arising from the Proposed Transaction that relate to Consoles Markets: (i) Activision content on Xbox Game Pass, (ii) an “alignment of incentives” between Microsoft and Activision, and (iii) increased distribution of Activision content through Microsoft’s 2023 contract with Nintendo.<sup>91</sup> It is not evident that these claimed efficiencies are merger-specific, but,

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Similarly, market shares could adjust from 70-30 to 50-50 if the larger firm *increased* its price or if the smaller firm *reduced* its price. Even though resulting shares are the same in both instances, the impact on consumers will not be.

<sup>89</sup> PX0006 at -012 (European Commission Form CO, Case M. 10646, Acquisition by Microsoft of Activision Blizzard, Sep. 30, 2022). Prior to the original Xbox console’s launch in 2001, there were also several high profile exits by well-known video game companies such as Sega and Atari. *See* PX5000 at -236 (Expert Report, ¶ 663).

<sup>90</sup> PX0003 at -070 (Microsoft FTC Second Request response, Jul. 1, 2022).

<sup>91</sup> Expert Report of Dennis W. Carlton, PhD, May 25, 2023 [hereinafter “Carlton Report”], ¶ 12; Expert Report of Elizabeth M. Bailey, PhD, May 26, 2023 [hereinafter “Bailey Report”], ¶¶ 129–132.

even if they are merger-specific, the Merging Parties have not quantified these claimed efficiencies or provided evidence that these efficiencies are likely to eliminate or offset the likely harms arising from the Proposed Transaction in the Consoles Markets.

**IV.D.1. Activision content becoming available on Xbox Game Pass**

125. There are several reasons why Activision content would likely be available on Xbox Game Pass in the but-for world absent the Proposed Transaction. Hence, it is not evident that plans to bring Activision content to Xbox Game Pass are merger-specific.

126. Activision CEO Bobby Kotick testified that [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED].<sup>92</sup> [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]<sup>93</sup> Similarly, in a regulatory filing concerning the Proposed Transaction to the European Commission, the Merging Parties stated, “[REDACTED]

[REDACTED]

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<sup>92</sup> PX7006, Investigational Hearing of Bobby Kotick, Sep. 20, 2022 [hereinafter “Kotick IH Tr.”] at 204:13–205:10.

<sup>93</sup> [REDACTED]

[REDACTED]

[REDACTED] .<sup>94</sup>

127. There is evidence that Activision and Microsoft have identified large financial benefits from bringing Activision content to Xbox Game Pass. For example:

- [REDACTED]

[REDACTED] .<sup>95</sup>

- [REDACTED]

[REDACTED]

[REDACTED] .<sup>96</sup>

- [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] .<sup>97</sup>

128. As a matter of economics, if potential gains from trade are truly large and substantial, there likely exist profitable contractual terms absent a merger whereby those gains would be realized and Activision content would be available on Xbox Game Pass.

129. Additionally, Microsoft has reached agreements with other third-party video game publishers to bring their content to Xbox Game Pass, including successful titles from each of the other “Big 4” publishers. For example:

<sup>94</sup> PX0006 at -117 (European Commission Form CO, Case M. 10646, Acquisition by Microsoft of Activision Blizzard, Sep. 30, 2022).

<sup>95</sup> PX2199 at -003 (email correspondence and attachment, Dec. 2019).

<sup>96</sup> [REDACTED]

[REDACTED]

<sup>97</sup> PX1763 at -013 (Microsoft internal presentation, Jan. 2022). *See also* PX4341 at -025 (email correspondence and attachment, Apr. 2022).



- Several Ubisoft games have been available on Xbox Game Pass, including *Assassin's Creed Origins*, *Tom Clancy's Rainbow Six Siege*, and *Far Cry 5*.<sup>98</sup>
- Microsoft has contracted with Take-Two to bring *Sid Meier's Civilization VI* and *NBA 2K* to Game Pass.<sup>99</sup>
- Microsoft agreed with EA to include access to EA Play, EA's content library service, with the Xbox Game Pass Ultimate and Xbox Game Pass PC subscriptions.<sup>100</sup>
- [REDACTED]  
[REDACTED].<sup>101</sup>

These examples demonstrate that providing Xbox Game Pass subscribers with access to additional content “for no additional charge”<sup>102</sup> can be achieved without integration. Microsoft has represented that the attractiveness of Xbox Game Pass to third parties has increased over time: “As Microsoft has acquired new content, it has been able to increase the attractiveness of Game Pass and to help prove the concept to attract additional third-party developers.”<sup>103</sup>

130. [REDACTED]  
[REDACTED]  
[REDACTED]

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<sup>98</sup> PX5000 at -227–228 (Expert Report, ¶ 633).  
<sup>99</sup> PX4624 at -001 (email correspondence and attachment, Apr. 2022); PX1995 at -006 (email correspondence and attached Game Pass License Agreement, Apr. 2022); PX5000 at -227–228 (Expert Report, ¶ 633).

<sup>100</sup> [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

<sup>101</sup> PX5000 at -227–228 (Expert Report, ¶ 633).  
<sup>102</sup> Carlton Report, ¶ 142.  
<sup>103</sup> PX0003 at -076 (Microsoft FTC Second Request response, Jul. 1, 2022).

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED].<sup>104</sup>

131. I acknowledge that there is uncertainty regarding Activision’s support of Xbox Game Pass but for the Proposed Transaction, especially with respect to new titles being made available day and date. Hence, I also evaluate Activision support of Xbox Game Pass as if it were merger-specific. However, *even if* considered merger-specific, I have not seen evidence that bringing Activision content to Xbox Game Pass would eliminate or offset the likely harms arising in the Consoles Markets, and neither the Merging Parties nor their economic experts have quantified these claimed efficiencies.

132. Evidence presented above indicates that the Merged Entity would likely have the economic incentive to foreclose Sony PlayStation consoles from Activision content, but that Activision content would still be available to Xbox console users even absent the transaction. As a result, it is unlikely that the benefit from providing Activision content to Xbox users through Xbox Game Pass—*content that these users already are able to purchase on Xbox*—is sufficient to eliminate the harm from foreclosing users on PlayStation consoles from Activision content altogether.

133. Moreover, the inclusion of Activision content on Xbox Game Pass is likely to increase Microsoft’s incentive to increase the price of Game Pass, thereby reducing the potential value of inclusion of Activision content on Game Pass.

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<sup>104</sup> PX2189 at -015 (Letter agreement between Sony and Activision, [REDACTED]).

#### IV.D.2. Alignment of incentives

134. Defendants’ economic expert Prof. Carlton asserts without any cited evidence that the acquisition will create “greater incentives to invest in developing new games or franchises or improving existing games or franchises.”<sup>105</sup> Prof. Carlton claims that “[t]he combined company will have an increased incentive” to engage in such investment,<sup>106</sup> but this is not correct in general: the Merged Entity may actually have a *reduced incentive to invest compared to an independent Activision* in games, features, or other content that also benefits rivals of Microsoft. The reason is similar to why the Merged Entity would have a greater economic incentive to foreclose Activision content than an independent Activision: by reducing investment in content that benefits Microsoft’s rivals, the Merged Entity stands to gain from diverted sales to Microsoft’s Xbox consoles and Game Pass subscriptions.

135. Prof. Carlton also claims that “[t]his alignment of incentives between Microsoft and Activision has not been and likely cannot be achieved by contract,”<sup>107</sup> but he does not provide evidentiary support for the extent to which purported misalignments between integration and contracting meaningfully reduce investment. Microsoft uses contracts with independent studios to jointly develop games, and Defendants’ experts do not explain why, if inefficiencies from such arrangements are severe, Microsoft uses such arrangements.<sup>108</sup> Hence, the Merging Parties have not established that the claimed “alignment of incentives” is merger-specific.

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<sup>105</sup> Carlton Report, ¶¶ 144–145.

<sup>106</sup> Carlton Report, ¶¶ 144–145.

<sup>107</sup> Carlton Report, ¶ 145.

<sup>108</sup> [REDACTED]

136. Additionally, neither the Defendants nor their economic experts have provided quantitative analysis of these claimed efficiencies.

**IV.D.3. Nintendo agreement**

137. In February 2023, Microsoft signed an agreement with Nintendo to “use best efforts to develop and publish future native console versions of the *Call of Duty* Titles for Nintendo Platforms.”<sup>109</sup> It is not evident that this agreement would eliminate or offset harm in the Consoles Markets arising from the likely foreclosure of PlayStation from Activision content as a result of the Proposed Transaction for at least three reasons:

138. First, an independent Activision would have a greater economic incentive to support Microsoft’s rivals than the Merged Entity. Hence, if bringing *Call of Duty* to Nintendo consoles were in the Merged Entity’s economic interests, then it would likely be in an independent Activision’s interests to do so, as well. In this case, any benefits arising from such an agreement would not likely be merger-specific.

139. Second, since the Nintendo Switch is not contained in the High-Performance Video Game Consoles market, the agreement does not address harm arising in this market.

140. Third, evidence indicates that [REDACTED]

[REDACTED].<sup>110</sup> [REDACTED]

[REDACTED]

[REDACTED]

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<sup>109</sup> PX1779 at -001 (*Call of Duty* Side Letter to Nintendo Switch Content License and Distribution Agreement, Feb. 10, 2023).

<sup>110</sup> [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

111

#### **IV.D.4. Other claimed efficiencies**

141. The Merging Parties have raised two additional pro-competitive justifications that are not sufficient to eliminate the likely harms resulting from the Proposed Transaction in the Consoles Markets. The first is that the Proposed Transaction will allow Microsoft to expand into mobile gaming and create a new mobile game distribution platform.<sup>112</sup> Such a potential benefit is not evidently merger-specific and does not address harm in the relevant markets, as mobile gaming is distinct from non-mobile gaming. The second is that the Proposed Transaction would allow Microsoft to bring to Xbox certain exclusive *Call of Duty* add-on content previously exclusive to PlayStation consoles. However, it is unlikely that bringing such add-on content to Xbox would eliminate harm resulting from the foreclosure of PlayStation from Activision content, including full game titles and not just add-on content.

### **V. Gaming services**

#### **V.A. Market definition**

142. *Content Library and Cloud Gaming Services, Content Library Services, and Cloud Gaming Services* are relevant antitrust product markets for analyzing the competitive effects of the Proposed Transaction. The United States is a relevant geographic market for each of these relevant product markets.

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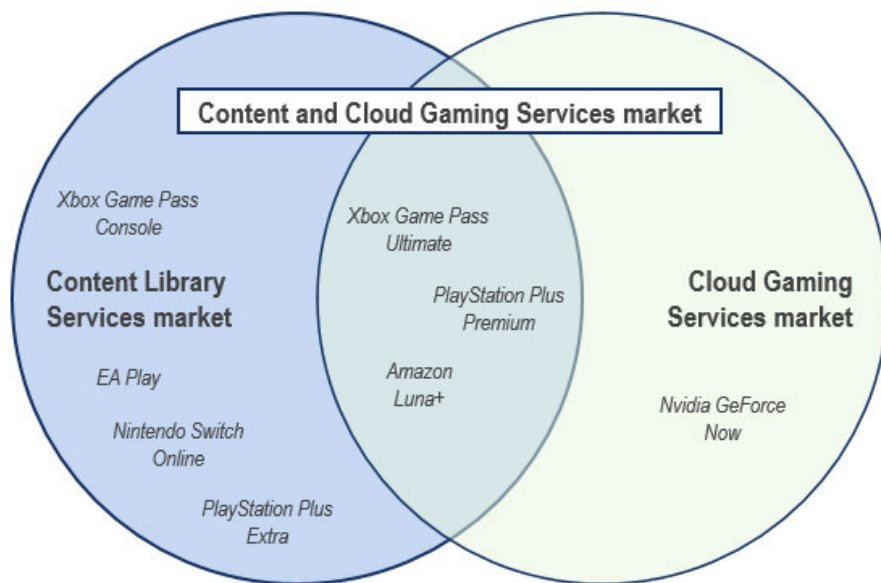
<sup>111</sup> PX4354 at -001 (email correspondence, Dec. 2022).

<sup>112</sup> PX5000 at -240 (Expert Report, ¶ 683).

### V.A.1. Content Library and Cloud Gaming Services

143. *Content Library and Cloud Gaming Services* is a relevant product market for evaluating the competitive effects of the proposed transaction. As illustrated in Figure 6, this market includes all video game subscription services that offer content library services for games that are played primarily on non-mobile devices (e.g., consoles or PCs) or cloud gaming services for games that are played primarily on non-mobile devices. The market also includes any gaming services that offer *both* content library and cloud gaming services.

**Figure 6: Gaming Services Markets**



Source: PX5000 at -104 (Expert Report, Figure 22).

Note: The figure is illustrative and does not identify all products that compete in these markets.

144. Products in the Content Library and Cloud Gaming Services market that offer content library services for games that are primarily played on non-mobile devices include, among others, Xbox Game Pass (all tiers), PlayStation Plus (Extra and Premium tiers), Amazon Luna+, and EA Play. This market also includes Nvidia GeForce Now, which offers cloud gaming services but not content library services. Several of the products in this market offer *both* content library and cloud gaming services for games that are primarily played on non-mobile devices,

including Xbox Game Pass Ultimate, PlayStation Plus Premium, and Amazon Luna+. Products outside of the Content Library and Cloud Gaming Services market do not offer either content library or cloud gaming services for games primarily played on non-mobile devices.

145. The Content Library and Cloud Gaming Services market is broader than and wholly contains all products in the other two Gaming Services markets. Because Microsoft's Xbox Game Pass Ultimate product offers both content library and cloud gaming services, each product in the Content Library and Cloud Gaming Services market competes with Xbox Game Pass Ultimate on at least one of these services. Later, I define separately a narrower Content Library Services market and a narrower Cloud Gaming services market. Defining narrower markets helps focus attention more closely on a narrower set of products where competitive effects may occur.

146. Evidence indicates that providers of content library and cloud gaming services benchmark their pricing and features against other products in the market, consistent with the products in the market being the largest constraints on each other's pricing.

147. Notably, Microsoft has explicitly compared and benchmarked the pricing and features of Xbox Game Pass to Sony's PlayStation Plus Extra and Premium services, products that are contained in this market.<sup>113</sup> In a March 2022 email, Microsoft Gaming CFO Tim Stuart created a table, reproduced in Figure 7, comparing the pricing and features of Xbox Game Pass and PlayStation Plus.<sup>114</sup>

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<sup>113</sup> As well, in a May 2022 "Gaming Leadership Team" slide deck, Microsoft noted that "[r]ecently, Sony announced a rebranding of its subscription services to better compete with Game Pass. The new PlayStation Plus subscription is merging with PS Now and comes with 3 tiers of content access. PlayStation Plus has a more limited catalogue of titles available than Game Pass and will not add exclusive titles on the day of launch." PX1022 at -048 (email correspondence and attachment, May 2022).

<sup>114</sup> PX1151 at -001 (email correspondence, Mar. 2022).

**Figure 7: Microsoft comparison of PlayStation Plus and Xbox Game Pass**

PlayStation	Price	Features	Xbox	Price	Features
PS+ Essential	9.99	Online MP + 2 Games	XBL Gold	9.99	Online MP + 2 Games
PS+ Extra	14.99	Adds 400 Games	XGP	9.99	Adds 400 Games + AAA 1P Day & Date
PS+ Premium	17.99	Adds 340 Games + Limited Streaming	XBP Ultimate	14.99	Adds PC + Full Streaming XGP

Source: PX1151 at -001 (email correspondence, Mar. 2022).

148. Regarding pricing, Mr. Stuart of Microsoft wrote, [REDACTED]

[REDACTED]

149. [REDACTED]

[REDACTED]

150. Sony [REDACTED]

[REDACTED] the Content Library and Cloud Gaming Services market.<sup>117</sup> For example, in a December 2019 PlayStation Plus strategy presentation [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED].<sup>118</sup>

<sup>115</sup> PX1151 at -001 (email correspondence, Mar. 2022).

<sup>116</sup> PX7041, Deposition of Tim Stuart, Corporate deponent, Mar. 28, 2023 at 5:21–6:19.

<sup>117</sup> For instance, [REDACTED]

[REDACTED]

<sup>118</sup> [REDACTED]



151. Evidence indicates that Microsoft also considers additional content library and cloud gaming services, other than those offered by Sony, as competitors to Xbox Game Pass. For example, in a July 2021 email regarding cloud gaming services, Microsoft Gaming CEO Phil Spencer wrote, “To date our #1 competitor here is really nVidia with GeForce Now. But we keep our eye on both Google and Amazon with Luna (also struggling).”<sup>119</sup>

**V.A.1.a. Content Library and Cloud Gaming Services provide benefits to gamers not found on products outside the market**

152. Content library services within the Content Library and Cloud Gaming Services market provide unique benefits to consumers that alternatives outside of this market do not provide by providing subscribers access to a library of video games that are played primarily on non-mobile devices for a periodic subscription fee.

153. Microsoft has acknowledged such benefits. For example, a Microsoft presentation on Xbox Game Pass observes that [REDACTED]

[REDACTED]”<sup>120</sup> [REDACTED]

[REDACTED]

[REDACTED]”<sup>121</sup> In a 2019 Microsoft slide deck discussing Game Pass, Microsoft notes that users of Game Pass “enjoy the large and varied games library, especially the ones they consider AAA,” “feel they are getting a good deal—lots of content for a low monthly price tag,” and “like to discover and try new types of games.”<sup>122</sup>

154. Cloud gaming services within the Content Library and Cloud Gaming Services market provide benefits that are not available from alternatives outside of this market. Cloud

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<sup>119</sup> PX4157 at -002 (email correspondence, Jul. 2021).

<sup>120</sup> PX4695 at -025–026 (Annex 6.84, Xbox internal presentation).

<sup>121</sup> PX4695 at -026 (Annex 6.84, Xbox internal presentation).

<sup>122</sup> PX1603 at -012 (Xbox internal presentation, Jan. 2019).

gaming services allow subscribers to play computationally demanding games on devices that do not have the capacity to run those games themselves, allowing these games to be played on a wider variety of devices and providing greater flexibility for where and when games can be played.

155. According to a declaration from Phil Eisler, Vice President and General Manager of Nvidia GeForce Now, “Cloud gaming allows high-powered [computer processors] to be hosted in the cloud. Consumers can access those high-powered processors through their devices with low processing power, such as low-end laptops and mobile devices. As a result, cloud gaming provides a high-end gaming experience, with rich graphics, without requiring consumers to upgrade to the latest graphics card, PC, or console.”<sup>123</sup>

156. Industry participants, including Microsoft, acknowledge the value of cloud gaming.<sup>124</sup> For example:

- Mr. Eisler of Nvidia explains that “[s]hifting gaming hardware to the cloud has helped AAA gaming reach users in lower socioeconomic groups who otherwise would not be able to purchase, or could not afford, their own video game system or gaming PC.”<sup>125</sup>
- A 2020 Microsoft Gaming board presentation states that “xCloud game streaming is a new service growth area with potential to reach 2 billion players across the planet on every computing end-point. Estimated to be biggest streaming service globally.”<sup>126</sup>

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<sup>123</sup> PX8000 at -002 (Declaration of Phil Eisler, Dec. 2, 2022).

<sup>124</sup> See also PX7036, Nadella Depo. Tr. at 165:21–166:10 (“Q. And do you see the entry here, Mr. Nadella, where it reads: Microsoft is well positioned to deliver this vision of ubiquitous gaming given our capabilities in content, community and cloud. Do you see that? A. Yeah, I do. Q. And these three pillars, content, community and cloud, these are also the pillars that you highlight to the investment community as the core of Microsoft’s gaming strategy; is that correct? A. That’s correct.”).

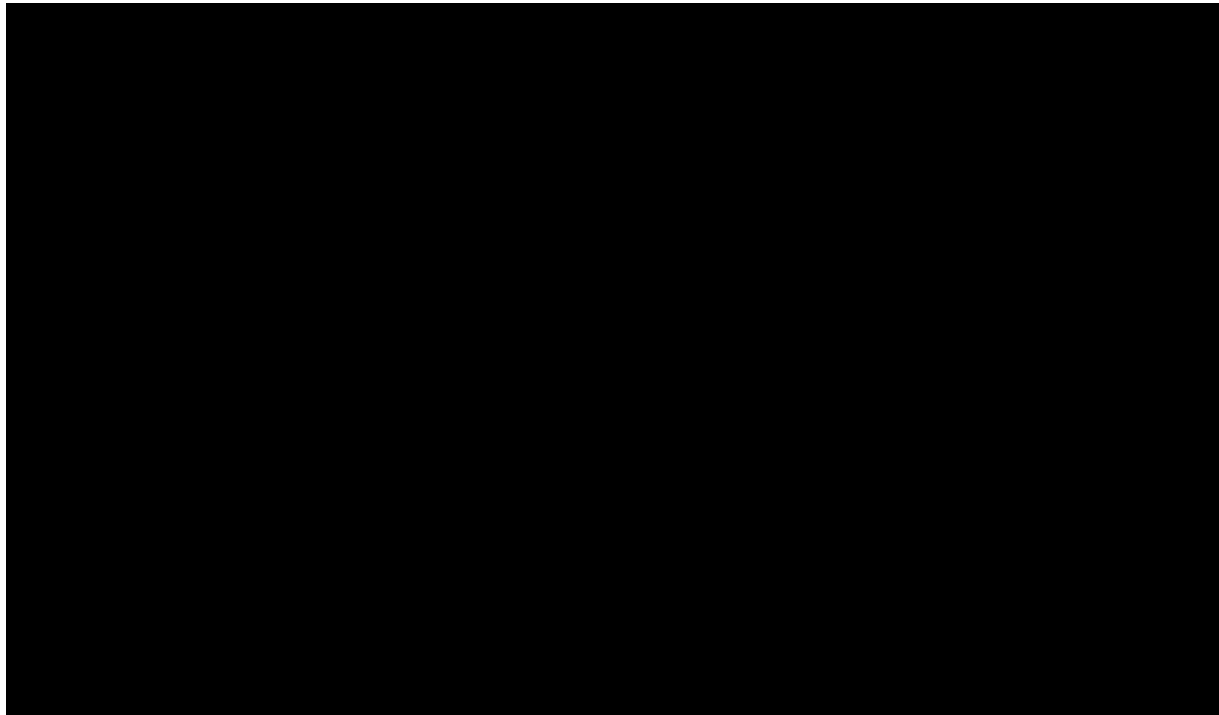
<sup>125</sup> PX8000 at -002 (Declaration of Phil Eisler, Dec. 2, 2022).

<sup>126</sup> PX1110 at -003 (Microsoft Gaming Board presentation, Mar. 2020).

- [REDACTED]  
[REDACTED]  
[REDACTED]<sup>127</sup>

157. Further, evidence indicates that users derive value from cloud services, and are more valuable customers. For example, Microsoft documents indicate that cloud gaming users had greater engagement than other users, and a 2022 report from the Xbox Cloud Gaming team states that “gamers who play a title with cloud engage more, purchase more [downloadable content] and install more games than their ‘lookalike’ peers” playing on console.<sup>128</sup>

**Figure 8: Monthly hours played and total number of active users on Xbox Cloud Gaming in the United States, by device, Sep. 2020–Feb. 2023**



Source: PX5000 at -123 (Expert Report, Figure 26).

Note: Mobile devices include Android, iOS, iPad, Tizen OS, and Fire OS devices. PC includes macOS, Windows, Linux and Chrome OS devices

<sup>127</sup> PX4617 at -009 (Microsoft FY23 xCloud strategy document).

<sup>128</sup> PX1025 at -007 (Microsoft “Powering Xbox Everywhere” presentation, May 2022).

158. Cloud gaming is a nascent technology and is growing in usage. As shown in Figure 8, cloud usage on Microsoft’s cloud gaming service offering through Xbox Game Pass has increased, measured both by hours and the number of monthly active users.

**V.A.1.b. Products outside of the Content Library and Cloud Services market**

159. Products that do not offer content library or cloud gaming services would likely not constrain a hypothetical monopolist of all content library or cloud gaming services from profitably implementing a SSNIP.

160. Subscription services that focus on enabling online multiplayer gaming (“multiplayer gaming subscription services”) are not in the Content Library and Cloud Gaming Services market, as they do not offer the same diversity of content and game discoverability as content library services which often offer a library of hundreds of games. Examples of such services include Xbox Live Gold and PlayStation Plus Essential. Jerrett West, Corporate Vice President of Gaming Marketing at Microsoft, testified that Xbox Live Gold is “currently separate from Game Pass” and “the big difference is Game Pass has a catalog of games. Live Gold is specifically focused on multiplayer gaming.”<sup>129</sup>

161. Apple Arcade and other services that offer access to a content library of games that are primarily played on mobile devices are also not in the relevant market. Mobile games are highly differentiated from video games primarily played on non-mobile devices, such as consoles or PCs. According to the Merging Parties, “mobile games tend to be technically less advanced with lower performance in terms of graphics, gameplay functionalities and features,” while

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<sup>129</sup> PX7005, West IH Tr. at 20:3–24. (“Q. So Live Gold does not offer a catalog of games? A. They do not.”). Likewise, PS Plus Essential does not offer a catalog of games. PX7053, Ryan Depo. Tr. (Vol. I) at 17:1–22.

“console games [offer] a more advanced gaming experience in terms of graphics, music, available options, gameplay, scope and depth of storyline.”<sup>130</sup>

162. Buy-to-play video games, whereby consumers purchase individual game titles, are also not in the relevant market. The evidence indicates that substitution to buy-to-play titles would be insufficient to render a SSNIP by a hypothetical monopolist of Content Library and Cloud Gaming Services unprofitable.

163. Buy-to-play games are fundamentally different from products in the Content and Gaming Services market, and do not provide the same access to a broad catalog of content for a periodic fee or facilitate new content discovery in the same manner as the content library services contained within this market.

164. Microsoft itself has indicated that it views Xbox Game Pass, and its content library services, as complementary to and not a substitute for buy-to-play sales. In an email discussing digital sales and subscription services addressed to a third-party publisher, Sarah Bond, Microsoft Gaming Corporate Vice President of Creator Experiences and Ecosystem Management, wrote that “[Microsoft’s] intent with Game Pass (GP) long-term is to be **additive** to the ecosystem. Our research of subscriptions across media forms has shown that consumers like and use both models” (emphasis added).<sup>131</sup>

165. I concluded that the Content Library and Cloud Gaming Services market satisfies the HMT and is a relevant product market.

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<sup>130</sup> PX0006 at -052 (European Commission Form CO, Case M. 10646, Acquisition by Microsoft of Activision Blizzard, Sep. 30, 2022).

<sup>131</sup> PX1767 at -001 (email correspondence, Apr. 2019).

### V.A.2. Content Library Services

166. A narrower market wholly contained within the Content Library and Cloud Gaming Services market consisting only of *Content Library Services* is also a relevant product market for analyzing the competitive effects of the Proposed Transaction. The Content Library Services market contains all content library services that offer access to games that are played primarily on non-mobile devices.

167. Products in the Content Library Services market include Xbox Game Pass (all tiers), PlayStation Plus (Extra and Premium tiers), Nintendo Switch Online, Amazon Luna+ and Prime Gaming, EA Play, and Ubisoft+.

168. The evidence presented above indicates that a hypothetical monopolist of the broader Content Library and Cloud Gaming Services market likely would profitably implement a SSNIP on at least one product contained in that market, including at least one product owned by Microsoft. Excluding Cloud Gaming Services that do not offer content library services, such as Nvidia's GeForce NOW, does *not* prevent a hypothetical monopolist of a narrower Content Library Services market from likely implementing a SSNIP on at least one such product offering content library services.

169. First, the evidence presented above indicates that products offering content library services—including Xbox Game Pass Ultimate and PlayStation Plus Premium—impose significant price constraints on one another.

170. Second, as discussed above, there are valuable features provided by content library services that are absent from gaming services that do not offer a content library, notably facilitating game discovery and providing access to a wide set of games for a periodic subscription fee. These features are absent from gaming services that do not offer a content library, including cloud gaming services with a BYOG model such as Nvidia GeForce Now.

171. Third, there is evidence that market participants view content library services as a distinct set of products. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED].<sup>132</sup>

172. I concluded that Content Library Services market satisfies the HMT and is a relevant product market.

### **V.A.3. Cloud Gaming Services**

173. A narrower market wholly contained within the Content Library and Cloud Gaming Services market consisting only of *Cloud Gaming Services* is also a relevant product market for analyzing the competitive effects of the Proposed Transaction. The Cloud Gaming Services market contains all cloud gaming services that offer access to games that are played primarily on non-mobile devices.

174. Products in the Cloud Gaming Services market include Xbox Game Pass Ultimate, PlayStation Plus Premium, Nvidia GeForce Now, Amazon Luna+ and Prime Gaming. With the exception of Nvidia GeForce Now, these products also offer content library services. Given the nascency of cloud gaming services, the competitive landscape continues to evolve.<sup>133</sup>

175. Excluding services from the broader Content Library and Cloud Gaming Services market that do not offer cloud gaming services—i.e., services that offer content library but not

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<sup>132</sup> PX1995 at -008 (email correspondence and attached Game Pass License Agreement, Apr. 2022).

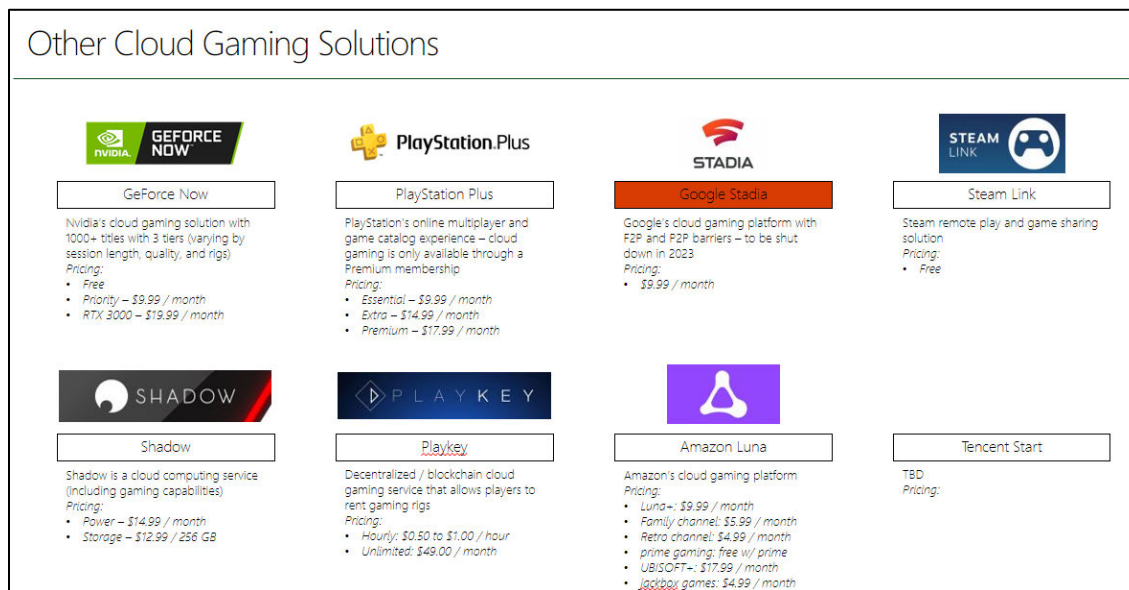
<sup>133</sup> [REDACTED] See also PX4181 at -019 (email correspondence and attachments, Dec. 2022).

cloud gaming services—from this broader market does not prevent a hypothetical monopolist of a narrower Cloud Gaming Services market from likely implementing a SSNIP on at least one cloud gaming services product.

176. First, as discussed above, there are distinct benefits provided by cloud gaming services that are absent from non-cloud gaming services. For the set of consumers seeking cloud gaming capabilities, gaming services that do not offer access to cloud gaming services are not effective substitutes for products in the Cloud Gaming Services market. Moreover, evidence indicates that Microsoft and other industry participants acknowledge the value of cloud gaming, that cloud gaming users tend to play and spend more than other users, and some users specifically value cloud gaming services.

177. Second, there is substantial evidence that Microsoft considers cloud gaming services as a distinct product segment and other gaming service providers as competitors. For example, an October 2022 Microsoft presentation directly compares “Other Cloud Gaming Solutions,” including Nvidia GeForce Now, PlayStation Plus, and Amazon Luna:

**Figure 9: Microsoft’s analysis of Cloud Gaming competitors, Oct. 2022**



Source: PX5000 at -136 (Expert Report, Figure 32).



178. Third, there is evidence that Microsoft and Nvidia GeForce Now, in particular, view one another as competitors. For example, a March 2021 email from Head of Xbox Game Studios Matt Booty noted that “[w]e have pulled all [Xbox Game Studios] titles from GeForce now so as to not compete with xCloud.”<sup>134</sup> Additionally, a declaration from Phil Eisler, Vice President and General Manager of Nvidia GeForce Now, explains that GeForce Now benchmarks its pricing to other cloud gaming services, including Xbox Game Pass Ultimate.<sup>135</sup>

179. The combined qualitative and quantitative evidence supports the conclusion that a hypothetical monopolist owning cloud gaming services for video games primarily played on non-mobile devices would likely implement a SSNIP on at least one of these products.<sup>136</sup> Hence, the Cloud Gaming Services market satisfies the HMT and is a relevant product market.

#### **V.A.4. Geographic market**

180. The United States is a relevant geographic market for the (i) Content Library and Cloud Gaming Services market, (ii) the Content Library Services market, and (iii) the Cloud Gaming Services market for assessing the competitive effects of the Proposed Transaction.

181. Evidence indicates that customers do not view purchasing content library services or cloud gaming services in another country as a reasonable substitute for purchasing those gaming services in the United States, and gaming services vary in pricing, content, and availability across countries.

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<sup>134</sup> PX4351 at -002 (email correspondence, Mar. 2021).

<sup>135</sup> PX8000 at -007 (Declaration of Phil Eisler, Dec. 2, 2022).

<sup>136</sup> For example, evidence indicates that a hypothetical monopolist of cloud gaming services would likely implement a SSNIP on Nvidia’s GeForce Now product.

182. First, evidence indicate that gaming service pricing and competition is country-specific. Jerret West, Microsoft Corporate Vice President of Gaming Marketing, testified Xbox Game Pass pricing varies by country and is responsive to local competitive conditions.<sup>137</sup>

183. Second, the availability of gaming services varies by country, even if such services are provided by the same company. According to Microsoft’s web site, Xbox Game Pass for PC supports many more countries than Game Pass Ultimate or Game Pass for Console.<sup>138</sup> As of April 2023, Xbox Cloud Gaming is only available in 28 countries, and is released on a country-by-country basis.<sup>139</sup>

184. Third, the availability of games on content library services also varies by country. According to Microsoft, “[g]ame titles, number, features and availability [on Xbox Game Pass] vary over time, by region and platform.”<sup>140</sup>

185. Fourth, evidence indicates that proximity to cloud services is important to cloud gaming performance.<sup>141</sup>

186. This combined evidence supports the conclusion that the United States is a relevant geographic market for the three Gaming Services Markets.

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<sup>137</sup> PX7005, West IH Tr. at 221:18–222:11 [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

<sup>138</sup> PX5000 at -138 (Expert Report, ¶ 352). PX1019 at -025 (email correspondence and attachment, Aug. 2019) (2019 Microsoft document noting that Activision was [REDACTED])  
[REDACTED]

[REDACTED]. *See also* PX1624 at -026–027 (Xbox internal presentation, Jul. 2019) (discussing launch of Game Pass Streaming Beta program by region).

<sup>139</sup> PX5000 at -139 (Expert Report, ¶ 353).

<sup>140</sup> PX5000 at -139 (Expert Report, ¶ 355).

<sup>141</sup> PX5000 at -139–140 (Expert Report, ¶ 356).

### **V.B. Ability and incentive to foreclose in the Gaming Services Markets**

187. The Merged Entity would have the **ability** to foreclose Microsoft's rivals in each of the Gaming Services Markets from Activision content.

188. Importantly, the Merged Entity would have the ability to foreclose Microsoft's rivals in the Gaming Services Markets from both new and back-catalog content. My analysis shows that the majority of console game play hours on Xbox Game Pass are spent on games that were released over a year prior, and █% of console game time across all publishers is for games that have been released over six months prior.

189. As to **incentive**, the Merged Entity would have a *greater economic incentive* to engage in foreclosure than an independent Activision in the Gaming Services Markets. In addition, the Merged Entity *would likely have the economic incentive* to engage in foreclosure by withholding Activision content from, or degrading Activision content to, Microsoft's rivals in the Gaming Services Markets.

190. To understand why Merged Entity would have a greater economic incentive to engage in foreclosure, compare the economic incentives of an independent Activision to the incentives of an Activision merged with Microsoft. Activision's *standalone* independent incentives to foreclose, or continue foreclosing, Microsoft's rivals offering content library or cloud gaming services are unlikely to be significantly reduced by the Proposed Transaction. In contrast, Microsoft's benefits from foreclosure, or continued foreclosure, of rival gaming services are likely to be meaningful and significant. Hence, the Merged Entity, which considers the incentives faced by both Microsoft and Activision, will have a greater incentive than an independent Activision to engage in foreclosure in Gaming Services Markets.

191. Evidence discussed above that consumers’ gaming service purchase decisions are significantly affected by the availability of Activision content implies that Microsoft’s benefits from foreclosing rival gaming services from Activision content include capturing additional Xbox Game Pass sales and, potentially, additional Xbox console sales. Foreclosure of rival gaming services would likely also induce some consumers who otherwise would have spent their gaming time and money on a rival console or PC device to instead spend more on Microsoft products and services, generating greater profits for Microsoft.<sup>142</sup>

192. Microsoft also realizes additional and longer-term benefits from foreclosing rival gaming services and gaining scale in Xbox Game Pass. Several Microsoft documents explicitly reference benefits of gaining scale in content library and cloud gaming service markets, including making content “more expensive for competitors.” For example:

- A February 2020 Microsoft slide deck discussing Game Pass noted that “[o]ngoing scale [is] critical to driving durable success for content subs... The time to invest in Game Pass is now: accelerating leadership position, particularly off console, which will make future content bets more efficient for Microsoft (and more expensive for competitors).”<sup>143</sup>
- A July 2020 Microsoft presentation on its ZeniMax acquisition states, “Xbox Game Pass faces increasing competition; our window to scale subscribers & accelerate this virtuous cycle is narrowing[.] ... Acquiring ZeniMax would unlock nonlinear growth for Xbox Game Pass, establishing a long-term economic beachhead.”<sup>144</sup>
- An internal email exchange within the Office of the Chief Economist explains, “We see two channels for value from exclusivity [with regard to Game Pass]: 1) market stealing

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<sup>142</sup> PX5000 at -191 (Expert Report, ¶ 509).

<sup>143</sup> PX1049 at -003 (Microsoft internal presentation, Feb. 2020).

<sup>144</sup> PX1050 at -004 (email correspondence and attachment, Jul. 2020). *See also* PX1313 at -002 (email correspondence, May 2021) (regarding the potential acquisition of Bungie).

from other subscription services and 2) market shrinking of competitors from not having the content but trying to grow their user base.”<sup>145</sup>

193. In addition to the above, evidence indicates that the Merged Entity would likely have the *economic incentive* to engage in foreclosure in Gaming Services Markets by withholding Activision content from, or degrading Activision content for, Microsoft’s rivals.

194. With regard to content library services, Microsoft’s statements and internal documents indicate that Microsoft has the likely economic incentive to withhold Activision content from rivals.<sup>146</sup> Such statements are also consistent with actions and statements that Microsoft made for prior acquisitions, and in the case of *Minecraft* and *ZeniMax*, followed through on.<sup>147</sup> For example:

- Microsoft Gaming CEO Phil Spencer, in a September 2021 email to members of Gaming Leadership team, wrote, “[REDACTED]”  
[REDACTED]  
[REDACTED]  
[REDACTED]”<sup>148</sup>
- [REDACTED]  
[REDACTED]

<sup>145</sup> PX4267 at -003 (email correspondence, Feb. 2020).

<sup>146</sup> For example, in response to CMA Phase 1 Decision, Microsoft noted that, “Xbox may differentiate Game Pass by including Activision Blizzard games in Game Pass, whilst not making the titles available in the same manner or at the same time on other subscription services.” PX0014 at -024 (Microsoft’s Response To The CMA’s Reference Decision). *See also* PX0006 at -020 (European Commission Form CO, Case M. 10646, Acquisition by Microsoft of Activision Blizzard, Sep. 30, 2022) (“users of rival subscription services may not have access to games such as *Call of Duty* through a subscription service other than Game Pass”).

<sup>147</sup> *See also* PX1651 at -013–014 (ZeniMax Form CO, Jan. 2021) [REDACTED]

<sup>148</sup> PX1897 at -001 (email correspondence, Sep. 2021). PlayStation Now was a precursor of the PlayStation Plus Premium tier.

[REDACTED]

[REDACTED]<sup>149</sup>

- [REDACTED]

[REDACTED]

[REDACTED]<sup>150</sup>

195. With regard to rivals offering cloud gaming services, Microsoft indicated in internal communications its willingness to foreclose rival cloud gaming services from its first-party content. [REDACTED]

[REDACTED]

[REDACTED]<sup>151</sup> [REDACTED]

[REDACTED]<sup>152</sup> [REDACTED]

[REDACTED]

[REDACTED]<sup>153</sup>

### V.C. Harm to competition and consumers from foreclosure

196. After concluding that the Merged Entity would have the ability and likely economic incentive to foreclose rivals in the Gaming Services Markets, I evaluated the likely harm arising from such foreclosure relative to a but-for world in which an independent Activision would *more likely* support gaming services offered by Microsoft’s rivals.<sup>154</sup>

197. In my description of this but-for world, I use the term “more likely” to mean that Activision has a greater likelihood of supporting certain Microsoft rivals without the merger than

<sup>149</sup> PX1065 at -008 (email correspondence and attachment, Nov. 2020).

<sup>150</sup> PX1529 at -021 (email correspondence and attachment, Jan. 2020).

<sup>151</sup> PX4351 at -002 (email correspondence, Mar. 2021).

<sup>152</sup> PX7060, Deposition of Phillip Eisler, Apr. 12, 2023 [hereinafter “Eisler Depo. Tr.”] at 99:16–100:3.

<sup>153</sup> PX4351 at -001 (email correspondence, Mar. 2021).

<sup>154</sup> [REDACTED]

with the merger. I use such language because both the but-for world and the with-merger worlds are dynamic and uncertain—just like the real world. Importantly, I do not assume that Activision content would be available on content library or cloud gaming services offered by Microsoft’s rivals for certain but for the merger. Rather, because an independent Activision has a greater economic incentive to support Microsoft’s rivals than the Merged Entity, it follows that an independent Activision would be *more likely* than the Merged Entity to support certain rivals as the Gaming Services Markets continue to evolve and develop.

198. Even so, testimony and documentary evidence indicate that an independent Activision would be willing, under the right economic circumstances, to support non-Microsoft subscription services.<sup>155</sup> For example:

- [REDACTED]
- [REDACTED]<sup>156</sup>
- [REDACTED]<sup>157</sup>

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<sup>155</sup> For example, a March 2020 Activision slide presentation regarding [REDACTED]

<sup>156</sup> PX7006, Kotick IH Tr. at 135:13–138:25.

<sup>157</sup> Activision titles were available on Nvidia’s GeForce Now between June 2017 and February 2020, including multiple *Call of Duty* titles. PX8000 at -008–009 (Declaration of Phil Eisler, Dec. 2, 2022).

[REDACTED]

[REDACTED].<sup>158</sup>

- A September 2019 Activision slide presentation regarding [REDACTED]

[REDACTED]

[REDACTED].<sup>159</sup> [REDACTED]

[REDACTED].<sup>160</sup> [REDACTED]

[REDACTED].<sup>161</sup> [REDACTED]

[REDACTED]

[REDACTED].<sup>162</sup>

199. As noted above, other large publishers, including all of the other “Big 4” publishers support gaming services through Xbox Game Pass. EA and Ubisoft also support cloud gaming through Nvidia GeForce Now.<sup>163</sup>

200. While there is uncertainty regarding whether, and with what content, Activision would support Microsoft’s rivals, this does not mean that one cannot obtain economic conclusions regarding probable competitive effects. From an economic perspective, it is appropriate to analyze the competitive effects of a transaction across the range of possible outcomes given uncertainty about the future.

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<sup>158</sup> See PX8000 at -009 [REDACTED]  
 [REDACTED]  
 [REDACTED]  
 [REDACTED]  
 [REDACTED]

<sup>159</sup> PX2159 at -007–010 (email correspondence and attachment, Sep. 2019).

<sup>160</sup> PX2159 at -004 (email correspondence and attachment, Sep. 2019).

<sup>161</sup> PX2159 at -010 (email correspondence and attachment, Sep. 2019) [REDACTED]  
 [REDACTED]  
 [REDACTED]

[REDACTED]t, emphasis original).

<sup>162</sup> PX2159 at -007 (email correspondence and attachment, Sep. 2019).

<sup>163</sup> PX7060, Eisler Depo. Tr. at -164:17–164:23.



201. Foreclosing Microsoft’s rivals in Gaming Services Markets by withholding or degrading Activision content will tend to reduce the competitiveness of gaming services that Microsoft competes with and likely lead to consumer harm through higher prices, lower quality, reduced product variety, and less innovation relative to a but-for world in which an independent Activision would be more likely to supply Microsoft’s rivals. Foreclosure would weaken the competition faced by Microsoft from firms providing content library and cloud gaming services and increase Microsoft’s market power in markets where Microsoft is already a market leader.

202. Cloud gaming services are still nascent and continuing to develop, with a greater potential for entrants to meaningfully create value for consumers by introducing alternative ways to access games. Cloud gaming services have exhibited rapid growth in usage in the past one to two years, and, as a result, harm from foreclosure in the present *is likely to be magnified in the future* if entrants and smaller players are significantly disadvantaged.<sup>164</sup>

#### **V.C.1. Entry**

203. Evidence indicates that entry or expansion into Gaming Services Markets is unlikely to be timely, likely, or sufficient to reverse the likely harm of the Proposed Transaction.

204. Evidence indicates entry and success into Gaming Services Markets is difficult. The data indicate that most other gaming services available today significantly lag the scale of Xbox Game Pass.<sup>165</sup> And, the recent discontinuation of Google Stadia provides evidence that entry into cloud streaming services is challenging, even for well-financed companies.<sup>166</sup>

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<sup>164</sup> See PX1517 at -008 (Xbox internal presentation, May 2022) [REDACTED]

<sup>165</sup> PX5000 at -237 (Expert Report, ¶ 668).

<sup>166</sup> PX7035, Kotick Depo. Tr. at 154:18–155:5.

205. Cloud gaming services, in particular, require substantial infrastructure. As of October 2022, [REDACTED].<sup>167</sup>

[REDACTED]

[REDACTED] <sup>168</sup> [REDACTED]

[REDACTED]

[REDACTED] <sup>169</sup>

206. There is also evidence of significant economies of scale in gaming services, which gives established incumbents a significant advantage over potential entrants or less established competitors. Moreover, the cost of content for entrants increases if incumbents lock up limited available content.<sup>170</sup>

207. It is unlikely that entrant gaming services will be able to replace Activision content in their prospective video game catalogs if they are foreclosed.

**V.D. Potential pro-competitive effects**

208. Defendants’ economic experts asserted three categories of potential “merger-specific efficiencies” arising from the Proposed Transaction in the Gaming Services Markets: (i) Activision content becoming available on Xbox Game Pass, (ii) an “alignment of incentives” between Microsoft and Activision, and (iii) increased distribution of Activision content through Microsoft’s 2023 contracts with cloud gaming services.<sup>171</sup>

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<sup>167</sup> PX4154 at -005 (email correspondence and attachment, Oct. 2022).

<sup>168</sup> PX1039 at -002 (email correspondence and attachment, Jan. 2022).

<sup>169</sup> PX7060, [REDACTED]

<sup>170</sup> PX1877 at -001 (email correspondence and attachment, Feb. 2021). In addition, a Microsoft presentation states, “Public studies suggest that 75% of customers prefer paying for content and streaming capability together, which may prove challenging for Stadia and smaller players.” PX1613 at -005 (email correspondence and attachment, Jul. 2019).

<sup>171</sup> Carlton Report, ¶ 12; Bailey Report, ¶¶ 129-132.

209. It is not evident that these claimed efficiencies are merger-specific, but, even if they were, the Merging Parties have not quantified these claimed efficiencies or provided evidence that these efficiencies are likely to eliminate or offset the likely harms arising from the Proposed Transaction in the Gaming Services Markets.

#### **V.D.1. Activision content on Xbox Game Pass**

210. As noted above with regards to the Consoles Markets, there are several reasons why Activision content would likely be available on Xbox Game Pass in the but-for world absent the Proposed Transaction. Hence, it is not evident that plans to bring Activision content to Xbox Game Pass are merger-specific.

211. However, there is uncertainty regarding Activision's support of Xbox Game Pass but-for the Proposed Transaction, especially with respect to new titles being made available day and date. Hence, I also evaluate Activision support of Xbox Game Pass as if it were merger-specific. However, *even if* considered merger-specific, I have not seen evidence that bringing Activision content to Xbox Game Pass would eliminate or offset the likely harms arising in the evolving and developing Gaming Services Markets, and neither the Merging Parties nor their economic experts have quantified these claimed efficiencies.

212. Additionally, the inclusion of Activision content on Xbox Game Pass is likely to increase Microsoft's incentive to increase the price of Game Pass, thereby reducing any potential value of inclusion of Activision content on Game Pass.

#### **V.D.2. Agreements with cloud gaming service providers**

213. In 2023, Microsoft signed agreements with cloud gaming service providers, including Nvidia, Ubitus, and Boosteroid, to support their services with Activision content if the Proposed Transaction is consummated. It is not evident that this agreement would eliminate or

offset harm in the Gaming Services Markets arising from the likely foreclosure of Microsoft's rivals from Activision content as a result of the Proposed Transaction for at least four reasons:

214. First, an independent Activision would have a greater economic incentive to support Microsoft's rivals than the Merged Entity. Hence, if bringing Activision content to these gaming services were in the Merged Entity's economic interests, then it would likely be in an independent Activision's interests to do so, as well. In this case, any benefits arising from such an agreement would not likely be merger-specific.

215. Second, these agreements pertain only to cloud gaming services and do not address likely harm in the Content Library Services market.

216. Third, these agreements do not address foreclosure of rivals offering content library services alongside cloud gaming services, including Sony's PlayStation Plus Premium and Amazon's Luna+. They also do not address foreclosure of rivals in the United States with whom Microsoft does not have an agreement, or future entrants.

217. Fourth, these agreements also do not protect customers of the cloud gaming services with whom Microsoft has agreements, like Nvidia GeForce Now, from a lessening of competition in Gaming Services Markets, which can result in higher prices, lower quality, or reduced innovation in the relevant markets.

I declare under penalty of perjury that the foregoing is true and correct. EXECUTED on June 25, 2023.

A handwritten signature in black ink, appearing to read 'Robin S. Lee', with a stylized flourish at the end.

Robin S. Lee, PhD

## **Appendix A: Curriculum vitae**

**Robin S. Lee, PhD**

**Education**

- PhD, Business Economics, Harvard University
- AM, Economics, Harvard University
- AB, Economics, Harvard University, magna cum laude

**Academic positions**

- Harvard University, Department of Economics
  - Professor of Economics, 2019–present
  - Associate Professor of Economics, 2018–2019
  - Assistant Professor of Economics, 2014–2018
- New York University Stern School of Business
  - Assistant Professor of Economics, 2009–2014

**Research affiliation, academic visits, and other positions**

- Research Associate, National Bureau of Economic Research, 2019–present (Faculty Research Fellow, 2014–2019).
- MIT Sloan School of Management, Applied Economics, Fall 2016
- Yale University, Cowles Foundation, September 2016
- Columbia University, Dept of Economics, Nov 2016, Spring 2014
- Harvard University, Department of Economics, Spring 2013
- Northwestern University, Center for the Study of IO, Spring 2012
- New York University Stern School of Business, Visiting Scholar, 2008–2009
- Yahoo! Research, Research Scientist (Post-Doc), 2008–2009

**Editorial boards**

- *American Economic Journal: Microeconomics*, Editorial Board, 2019–2020; Co-Editor, 2020–present
- *International Journal of Industrial Organization*, Associate Editor, 2011–2020

## Selected publications

### Referred publications

- “A Theory of Stock Exchange Competition and Innovation: Will the Market Fix the Market?” (with Eric Budish and John Shim), accepted, *Journal of Political Economy*.
- “Health Insurance Menu Design for Large Employers” (with Kate Ho), accepted, *Rand Journal of Economics*.
- “The Price Effects of Cross-Market Hospital Mergers” (with Leemore Dafny and Kate Ho), Summer 2019, *Rand Journal of Economics*, 50(2): 286-325.
  - Awarded Best Antitrust Article on Mergers, American Antitrust Institute, 2019.
- “Equilibrium Insurer-Provider Networks: Bargaining and Exclusion in Health Care Markets” (with Kate Ho), February 2019, *American Economic Review*, 109(2): 473-522.
- “‘Nash-in-Nash’ Bargaining: A Microfoundation for Applied Work” (with Allan Collard-Wexler and Gautam Gowrisankaran), February 2019, *Journal of Political Economy*, 127(1): 163-195.
- “The Welfare Effects of Vertical Integration in Multichannel Television Markets” (with Greg Crawford, Michael Whinston and Ali Yurukoglu), May 2018, *Econometrica*, 86(3): 891-954.
  - Awarded Best Paper Prize, Association of Competition Economics, 2019.
- “Interviewing in Two-Sided Matching Markets” (with Michael Schwarz), Fall 2017, *Rand Journal of Economics*, 48(3): 835-855.
- “Hospital and Physician Prices and Treatment Choice in Labor and Delivery” (with Patricia Foo and Kyna Fong), Summer 2017, *American Journal of Health Economics*, 3(3): 422-453.
- “Insurer Competition in Health Care Markets” (with Kate Ho), March 2017, *Econometrica*, 85(2): 379-417.
  - Awarded the Frisch Medal, Econometric Society, 2020
- “Competing Platforms,” Fall 2014, *Journal of Economics and Management Strategy*, 23(3): 507-526.
- “Vertical Integration and Exclusivity in Platform and Two-Sided Markets,” December 2013, *American Economic Review*, 103(7): 2960-3000.
- “Exclusivity and Control” (with Andrei Hagiu), Fall 2011, *Journal of Economics and Management Strategy*, 20(3): 679-708.

### Other publications

- “Structural Empirical Analysis of Contracting in Vertical Markets” (with Michael Whinston and Ali Yurukoglu), 2021, *Handbook of Industrial Organization*, Volume 4, eds. Ali Hortaçsu, Kate Ho, and Alessandro Lizzeri, Elsevier.

- “AT&T/Time Warner and Antitrust Policy Toward Vertical Mergers” (with Gregory S. Crawford, Michael D. Whinston, and Ali Yurukoglu), 2019, *Competition Policy International*, 1(2).
- “Narrow Medical Provider Networks: Welfare Implications and Approaches to Market Design” (with Kate Ho), 2016, *More Equal By Design: Economic Design Responses to Inequality*, eds. Scott Duke Kominers and Alex Teytelboym, Oxford University Press.
- “Empirical Models of Bilateral Contracting,” 2015, *Emerging Trends in the Social and Behavioral Sciences*, eds. Robert A. Scott and Stephen M. Kosslyn, Wiley.
- “Home Videogame Platforms,” 2012, *The Oxford Handbook of the Digital Economy*, eds. Martin Peitz and Joel Waldfogel, Oxford University Press

### **Honors and awards**

- Frisch Medal, Econometric Society, 2020
  - (Best applied paper published in prior four years in *Econometrica*)
- Best Antitrust Article on Mergers, American Antitrust Institute, 2019
- Best Paper Prize, Association of Competition Economics, 2019
  - (Best paper on competition policy published in 2018)