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## Killer Acquisitions: Evidence from EC Merger Cases in Digital Industries

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# KILLER ACQUISITIONS

## EVIDENCE FROM EC MERGER CASES IN DIGITAL INDUSTRIES

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### Abstract

Do established firms buy new businesses to take out future competition? Recent works in economics literature use “killer acquisitions” as a graphic concept to describe these transactions. How concerned should competition policy be? The answer to this question hinges on how much the “theory” of killer acquisitions explains. To gain insights on this, the paper studies a sample of past cases composed of all merger transactions reviewed by the European Commission (“EC”) in ICT industries. In line with the predictions of the theory, some of these cases might constitute “killer acquisitions”. Hence, the paper asks: did they lead to a reduction of competition? By focusing on perceptions of the competitors of the acquired entity as reported in financial disclosures, the paper shows that one could not observe a disappearance of the target’s products, a weakening of competing firms, and/or a post-merger lowering or absence of entry and innovation. In other words, the paper finds no factual evidence supporting the killer acquisition theory. Whilst based on small number of observations, the paper’s findings are strong. Indeed the paper’s methodology overcomes the inherent problem of lack of observing the post-merger activities of the target, and addresses the inference problem that stems from the fact that even if the target’s products are discontinued in the buyer’s firm, it is *non sequitur* to infer from this a post-merger weakening of competition.

**Keyword:** Killer Acquisition, Dynamic Competition, Mergers and Acquisitions, Innovation

**JEL Classification:** G34, L41, L86, O31

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## I. Introduction

This paper studies whether large technology firms acquire small firms that could become their competitors in order to discontinue them. Known as “killer acquisitions”, the issue occupies center stage in competition policy debates across the globe. A legitimate concern is that some of these mergers and acquisitions (“M&A”) transactions might remove independent sources of *future* competition from markets subject to monopoly power in the *present*.

The economic literature suggests that killer acquisitions cluster in certain industries like pharmaceuticals<sup>1</sup> or that their competitive suppression effects require specific assumptions to hold true.<sup>2</sup> Nevertheless, competition agencies like the Federal Trade Commission (“FTC”), the Competition and Markets Authority (“CMA”), and the European Commission (“EC”) are challenging an increasing number of mergers in all technology industries, based on a relaxation of the existence conditions discussed in economic literature.<sup>3</sup> Last year, the CMA successfully prohibited the merger between Meta and the GIF supplier GIPHY.<sup>4</sup> In the US, the FTC has challenged Facebook’s acquisition of Within<sup>5</sup> and both the FTC<sup>6</sup> and the EC<sup>7</sup> have opened an in-depth investigation into Microsoft’s plan to buy Activision. The idea that large technology firms acquire startups to suppress competitive threats is driving rapid changes in merger policy. The purpose of the paper is to contribute to the debate on the competitive assessment of killer acquisitions through studying concrete cases.

We are interested in the “*kill*”. Let us present the issue in a logical way. If the kill targets a future “*competitor*,” then the focus should be on the target’s product and services (for convenience, we talk about products). The question is: are the (presently competitive) *products* of targets bought by large tech firms *abandoned* in the post-acquisition world? Or are the (prospectively competitive) *products* of targets *scaled* (the so-called “scaling acquisitions”)? And if the products and services are *scaled*, did the acquisition increase the scaling potential of the product compared to the non-acquisition world, hence increasing the survival potential of incumbents’ products? Or did it decrease survival potential? The answer to these questions is determinant of whether a merger transaction substantially lessens competition and innovation, and in turn meets the legal test

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<sup>1</sup> Donald Bowen III, Laurent Fresard, & Gerard Hoberg, ‘Rapidly Evolving Technologies and Startup Exits’ (2021) Swiss Finance Institute Research Paper No. 19-22.

<sup>2</sup> Colleen Cunningham, Song Ma, & Florian Ederer, ‘Killer Acquisitions’ (2021) 129 (3) Journal of Political Economy 649.

<sup>3</sup> Gregory Crawford, Cristina Caffarra, & Tommaso Valletti, ‘How tech rolls’: Potential competition and ‘reverse’ killer acquisitions’ (*VoxEU CEPR Blog*, 11 May 2020) <https://new.cepr.org/voxeu/blogs-and-reviews/how-tech-rolls-potential-competition-and-reverse-killer-acquisitions>.

<sup>4</sup> ‘CMA orders Meta to sell Giphy’ (*CMA Press Release*, 18 October 2022) <https://www.gov.uk/government/news/cma-orders-meta-to-sell-giphy>.

<sup>5</sup> ‘FTC Seeks to Block Virtual Reality Giant Meta’s Acquisition of Popular App Creator Within’ (27 July 2022) <https://www.ftc.gov/news-events/news/press-releases/2022/07/ftc-seeks-block-virtual-reality-giant-metas-acquisition-popular-app-creator-within>.

<sup>6</sup> ‘FTC Seeks to Block Microsoft Corp.’s Acquisition of Activision Blizzard, Inc.’ (8 December 2022) <https://www.ftc.gov/news-events/news/press-releases/2022/12/ftc-seeks-block-microsoft-corps-acquisition-activision-blizzard-inc>.

<sup>7</sup> ‘Mergers: Commission opens in-depth investigation into the proposed acquisition of Activision Blizzard by Microsoft’ (8 November 2022) [https://ec.europa.eu/commission/presscorner/detail/en/ip\\_22\\_6578](https://ec.europa.eu/commission/presscorner/detail/en/ip_22_6578).

required for a merger prohibition.<sup>8</sup> Preventing killer acquisitions is precautionary in nature. Thus, evaluating whether a transaction led to decreased competition in an *ex-post* fashion is important to minimize the risks of enforcement errors.

Unfortunately, it is hard to study the “*kill*” due to a problem of observability. Once a firm is bought, its products are integrated in the merged firm. How can we observe from the outside whether the target’s product is scaled or shelved by the buyer? The problem is compounded when the buyer integrates both its own product and the target’s.

Besides, the implicit idea behind the killer acquisitions’ theory relies on an untested inference about competition. Even if we assume in all cases that the target’s products are discontinued in the buyer’s firm, it would be *non sequitur* to infer a weakening of competition. Demand for the discontinued product may switch to alternative products, leading to the growth of third-party competitors.

A solution to both the observability and inference problems is to focus on perceptions of the competitors of the acquired entity. We can use competitors’ official statements (yearly 10-K reports to the Securities and Exchange Commission (“**SEC**”)) to address several issues at once. First, we can study if, in the competitors’ perception, the target is still “alive” post-acquisition. Second, we can use competitors’ official statements to assess the market shares of competitors before and after the merger and attempt to shed light on whether the merger weakened competition. Third, competitors’ official statements possibly embody anecdotal evidence about the existence or absence of competitive industry events, such as the entry of a new competitor or product innovation.

With this background, our paper proposes a simple procedure to assess the killer acquisition hypothesis. For the hypothesis to hold, we should expect to observe at least one of the three following changes after a merger: (1) a disappearance of the target’s products, (2) a weakening of competing firms, and (3) a post-merger lowering or absence of entry and innovation.<sup>9</sup> In this paper, we analyze EC merger cases in the ICT industry to assess whether these changes have been observed.<sup>10</sup>

The remainder of our paper is structured as follows: we first review the literature (II), introduce our methodology (III), present the results of our case studies, (IV), and formulate directions for future research (V).

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<sup>8</sup> A showing of a substantial lessening of competition is the test required under US and EU merger law to challenge a merger.

<sup>9</sup> We take a short-run perspective, as in usual merger investigations. Looking at the impact of suspected killer acquisitions by examining changes in the number of patents is a long-term perspective and is incompatible with our relatively small dataset.

<sup>10</sup> ICT industry includes the following lines of business: publishing activities; motion picture, video and television programme production, sound recording and music publishing activities; programming and broadcasting activities; telecommunications; computer programming, consultancy and related activities; information service activities. The letter “J” corresponds to the ICT industry in the EC’s methodology of classification (“NACE”).

## II. Literature review

Killer acquisitions are a recent topic of interest. In a 2021 article, Cunningham, Ma, and Ederer<sup>11</sup> called attention to the issue, defining killer acquisitions as transactions aimed toward terminating the development of the target's innovative product to preempt future competition.<sup>12</sup> Consequently, the authors expect killer acquisitions to result in a decrease in the development of substitutes.<sup>13</sup> Since Cunningham *et al.*, the issue has attracted enormous research interest. In this section, we describe the growing body of literature on killer acquisitions.

The killer acquisition literature clusters around the issue of incumbents buying startups. Motta and Peitz argue that such acquisitions harm consumer welfare due to anticompetitive amalgamations of data, increased prices, and reduced opportunities for entrants.<sup>14</sup> Other commentators like Lemley and McCreary consider that adverse effects on competition arise from venture capitalists' and startups' obsession with "exit strategy", defined as being acquired by a dominant competitor.<sup>15</sup> Affeldt and Kesler develop more nuanced conclusions on startups acquisitions. On the one hand, startup acquisitions can be classified as "killer" and hence anticompetitive if the target would be capable of pursuing innovative efforts without the merger.<sup>16</sup> On the other hand, startup acquisitions are pro-competitive if they alleviate financial, technical, and managerial constraints faced by the target firm.<sup>17</sup> In a more recent paper, the same authors allude to adverse effects from suspected killer acquisitions, finding that transactions involving large technology companies lead to a reduction and relocation of innovative efforts by other firms.<sup>18</sup> Brutti and Rojas argue that the pro or anticompetitive nature of a startup acquisition depends on "the relationship between the incumbent's and the startup's target users and on the ability of the startup to catch up with the incumbent."<sup>19</sup> Other works draw a link between the existence of a "killer acquisition, and the high

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<sup>11</sup> Earlier accounts conceived of killer acquisitions in a different manner compared to its recent usage. For example, Carlin et al. define killer acquisitions as "transactions that lead not just to value dissipation for the acquiring parties, but that result in such a profoundly negative outcome that the fact of the consummation of the transaction in fact results in the onset of financial distress and potential liquidation for the newly-enlarged firm". Tyrone M. Carlin, Nigel Finch, & Guy Ford, 'A Deal Too Far: The Case of the Killer Acquisition' in Gregoriou & Neuhauser (eds), *Mergers and Acquisitions: Current Issues* (Palgrave Macmillan 2007).

<sup>12</sup> Colleen Cunningham, Song Ma, & Florian Ederer, 'Killer Acquisitions' (2021) 129 (3) *Journal of Political Economy* 649.

<sup>13</sup> Cunningham, Ma, & Ederer (n 2) 652.

<sup>14</sup> Massimo Motta & Martin Peitz, 'Big Tech Mergers' (2021) 54 *Information Economics and Policy* 100868.

<sup>15</sup> Mark A. Lemley & Andrew McCreary, 'Exit Strategy' (2021) (101) *Boston University Law Review* 1.

<sup>16</sup> Pauline Affeldt & Reinhold Kesler, 'Big Tech Acquisitions – Towards Empirical Evidence' (2021) 12 (6) *Journal of European Competition Law & Practice* 471.

<sup>17</sup> Chiara Fumagalli, Massimo Motta, & Emanuele Tarantino, 'Shelving or Developing? The Acquisition of Potential Competitors Under Financial Constraints' (2020) CEPR Discussion Paper No. DP15113.

<sup>18</sup> Pauline Affeldt & Reinhold Kesler, 'Competitors' Reactions to Big Tech Acquisitions: Evidence from Mobile Apps' (2022) DIW Berlin Discussion Paper No. 1987.

<sup>19</sup> Zelda Brutti & Luis E. Rojas, 'M&A and Early Investment Decisions by Digital Platforms' (2022) 49 *Journal of Industrial and Business Economics* 509.

nominal amounts paid by the buyer to acquire the target.<sup>20</sup> For example, the USD 19 billion paid by Facebook for WhatsApp is often described as smoking gun evidence of anticompetitive evil.<sup>21</sup>

The literature on killer acquisitions often takes an industry-specific perspective.<sup>22</sup> For example, the seminal Cunningham, Ma, and Ederer article focuses on killer acquisitions in the pharmaceutical sector. Gautier and Lamesch develop the concept in relation to digital markets, where they focus on explaining the M&A activities of large technology firms.<sup>23</sup> Sokol develops an analysis of nascent competitor acquisitions in the biotech sector.<sup>24</sup>

The industry-specific development of the concept of killer acquisitions led some scholars to lament that the application of antitrust is becoming discriminatory.<sup>25</sup> But innovative and competitive dynamics are different across industries.<sup>26</sup> For example, pharmaceutical markets are less nimble relative to digital markets. Patents density is higher in pharmaceuticals, drug development is slow, innovation is cumulative, and generic entry is real.<sup>27</sup> These dynamics often lead pharmaceutical firms to engage in horizontal acquisitions to speed up innovation processes. Such dynamics are more prone to product overlaps and discontinuation of research and development efforts. By contrast, innovation in digital markets relies on product differentiation, complementarity, and ecosystem building.<sup>28</sup> For example, the gaming industry relies heavily on network-based innovation ecosystems and co-creation of content.<sup>29</sup> Non-horizontal acquisitions play a larger role in these industries.<sup>30</sup>

Empirical works suggests that killer acquisitions are a rare phenomenon.<sup>31</sup> In pharmaceuticals, Cunningham, Ma, and Ederer find a likelihood of 5.3% to 7.4% for a killer acquisition. In their analysis, Gautier and Lamesch consider that only one in 175 transactions qualify as a killer

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<sup>20</sup> See, e.g., Camila Cabral Pires-Alves, Manuel Gonzalo, & Marcos Lyra, 'Startups and Young Innovative Firms Mergers & Acquisitions: An Antitrust Debate?' (2019) 23 (2) *Revista de Economia Contemporanea* 1; Mats Holmström, Jorge Padilla, Robin Stitzing, & Pekka Saaskilahti, 'Killer Acquisitions? The Debate on Merger Control for Digital Markets' (2018) *Yearbook of the Finnish Competition Law Association*.

<sup>21</sup> See, e.g., Natalie Harsdorf, 'Digital Economy: New Test in Austrian Merger Control' (2017) 8 (7) *Journal of European Competition Law & Practice* 421.

<sup>22</sup> See, e.g., Amy Madl, 'Killing Innovation? Antitrust Implications of Killer Acquisitions' (2021) 38 *Yale Journal on Regulation Bulletin* 28.

<sup>23</sup> Axel Gautier & Joe Lamesch, 'Mergers in the Digital Economy' (2021) 54 *Information Economics and Policy* 1.

<sup>24</sup> Daniel Sokol, 'Merger Law for Biotech and Killer Acquisitions' (2021) 72 *Florida Law Review Forum* 1.

<sup>25</sup> John M. Yun, 'Discriminatory Antitrust in the Realm of Potential and Nascent Competition' (2022) *George Mason Law & Economics Research Paper No.* 22-04.

<sup>26</sup> Mark A. Lemley, 'Industry-Specific Antitrust Policy for Innovation' (2011) 3 *Columbia Business Law Review* 637.

<sup>27</sup> Arti K. Rai, 'Fostering Cumulative Innovation in the Biopharmaceutical Industry: The Role of Patents and Antitrust' (2001) 16 (2) *Berkeley Technology Law Journal* 813.

<sup>28</sup> Kumar R. Sarangee & Raj Echambadi, 'Firm-Specific Determinants of Product Line Technology Strategies in High Technology Markets' (2014) 8 (2) *Strategic Entrepreneurship Journal* 149.

<sup>29</sup> Patrycja Klimas & Wojciech Czakon, 'Gaming innovation ecosystem: actors, roles and co-innovation processes' (2022) 16 *Review of Managerial Science* 2213; Filipe Castro Soeiro, Mariana Santos, & Jose Alves, 'Network-based innovation: the case for mobile gaming and digital music' (2016) 28 (2) *European Business Review* 155.

<sup>30</sup> The Literature continues to treat non-horizontal mergers as largely beneficial for innovation. Giovanni Morzenti, 'Antitrust Policy and Innovation' (2022) [https://www.dropbox.com/s/pxwr4wt9hh5rate/Antitrust\\_and\\_Innovation\\_Paper\\_V2.pdf?dl=0](https://www.dropbox.com/s/pxwr4wt9hh5rate/Antitrust_and_Innovation_Paper_V2.pdf?dl=0).

<sup>31</sup> See, e.g., Steven Sunshine & Julia K. York, 'DoJs Failure to Prove its "Killer Acquisition" Claim in Sabre/Farelogix and Parallels to Other Recent Government Merger Litigation Losses' (2021) 72 *Florida Law Review Forum* 22; Frederic Marty & Thierry Warin, 'Visa Acquiring Plaid: A Tartan Over a Killer Acquisition?' (2020) *CIRANO Working Papers No.* 2020s-62.

acquisition. These results invite alternative explanations for the large population of startup acquisitions. For example, Cabral claims that acquisitions may reflect a desire to harvest beneficial complementarity effects by combining the assets of the target with those of the acquirer.<sup>32</sup> Others argue that acquisitions may be motivated by an aim to diversify product portfolios<sup>33</sup> or combine R&D activities.<sup>34</sup>

The low probability of the phenomenon does not imply minimal intervention under merger law. Merger control systems are for the marginal case. Seen through that light, the rates of 5 to 7% in Cunningham, Ma, and Ederer is equivalent to the average intervention level (prohibition rate) in merger cases in Europe.<sup>35</sup> Hence, the killer acquisition scenario might justify legitimate scrutiny from merger law. In line with this, some jurisdictions already broadened the scope of their merger control system in accordance with the “transaction value” threshold, including Austria and Germany.<sup>36</sup> At the same time, it is open to question whether the test used to determine whether a merger should be banned needs change.<sup>37</sup> Some have argued for a “more aggressive antitrust” by changing the merger guidelines for digital platforms.<sup>38</sup> The OECD has advocated for a reversal of the burden of proof for certain mergers.<sup>39</sup> By contrast, other economic works indicate that using an empirically frail narrative of killer acquisitions to craft more stringent merger enforcement policies risks impairing incentives to innovate.<sup>40</sup> These studies insist on a case-by-case, neutral assessment of start-up acquisitions by established firms.<sup>41</sup>

The killer acquisition scenario is also fueling new narratives on industry structure and business conduct. For example, killer acquisitions have been labelled “acquisitions for sleep”, according to which the target firm’s patents or other valuable assets are “put to sleep” after the transaction is complete.<sup>42</sup> Other works have developed a concept of “kill zones”, which represent less attractive business fields with difficulties in financing due to rampant acquisitions by large technology

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<sup>32</sup> Luis Cabral, ‘Merger Policy in Digital Industries’ (2021) 54 Information Economics and Policy 100866.

<sup>33</sup> Geoffrey Manne, Sam Bowman, & Dirk Auer, ‘Technology Mergers and the Market for Corporate Control’ (2022) 86 (4) Missouri Law Review 1047.

<sup>34</sup> Björn Lundqvist, ‘Killer Acquisitions and Other Forms of Anticompetitive Collaborations in Time of Corona’ (2022) BRICS Competition Law and Policy Series Working Paper No. 22/2022/01.

<sup>35</sup> The EC cleared 94% of the notified transactions between 2010 – 2017. See, European Court of Auditors, ‘The Commission’s EU merger control and antitrust proceedings: a need to scale up market oversight’ (2020) Special Report No. 24 [https://www.eca.europa.eu/Lists/ECADocuments/SR20\\_24/SR\\_Competition\\_policy\\_EN.pdf](https://www.eca.europa.eu/Lists/ECADocuments/SR20_24/SR_Competition_policy_EN.pdf).

<sup>36</sup> Kevin A. Bryan & Erik Hovenkamp, ‘Startup Acquisitions, Error Costs, and Antitrust Policy’ (2020) 87 (2) The University of Chicago Law Review 331.

<sup>37</sup> Claire Turgot, ‘Killer Acquisitions in Digital Markets: Evaluating the Effectiveness of the EU Merger Control Regime’ (2021) 2 European Competition and Regulatory Law Review 112.

<sup>38</sup> ‘Stigler Committee on Digital Platforms: Final Report’ (2019) <https://www.sipotra.it/wp-content/uploads/2020/02/Stigler-Committee-on-Digital-Platforms-Final-Report.pdf>.

<sup>39</sup> ‘Start-ups, Killer Acquisitions, and Merger Control’ (Background Note by the OECD Secretariat, DAF/COMP(2020)/5) [https://one.oecd.org/document/DAF/COMP\(2020\)5/en/pdf](https://one.oecd.org/document/DAF/COMP(2020)5/en/pdf).

<sup>40</sup> Igor Letina, Armin Schmutzler, & Regina Seibel, ‘Killer Acquisitions and Beyond: Policy Effects on Innovation Strategies’ (2020) CEPR Discussion Paper No. DP15167.

<sup>41</sup> Luise Eisfeld, ‘Entry and Acquisitions in Software Markets’ (2023) [https://luiseeisfeld.github.io/assets/docs/JMP\\_Eisfeld\\_TSE.pdf](https://luiseeisfeld.github.io/assets/docs/JMP_Eisfeld_TSE.pdf).

<sup>42</sup> Pehr-Johan Norback, Charlotta Olofsson, & Lars Persson, ‘Acquisitions for Sleep’ (2020) CESifo Working Paper No. 8095.

companies.<sup>43</sup> As a result, startups operating in or around the kill zone may be disincentivized to pursue innovations that would be capable of replacing the incumbent's product, opting for complementary innovations instead.<sup>44</sup> Elsewhere, commentators have discussed "reverse killer acquisitions", according to which acquirers refrain from competing by developing in-house products, instead relying on acquiring nascent competitors to create or bolster their portfolio.<sup>45</sup> The concern is that the acquisition eliminates "organic entry" by the incumbent that would have occurred in the counterfactual scenario.<sup>46</sup> By contrast, some scholars have dismissed the concern surrounding killer acquisitions entirely.<sup>47</sup> This view defends that acquisitions are generally pro-competitive and promote innovation rather than hinder it. For instance, a recent empirical study notes that mergers in high technology markets increase R&D expenditure by as much as USD 13.5 billion annually.<sup>48</sup>

Our work aims to contribute to the burgeoning literature on killer acquisitions by providing a multiple case studies analysis of technology mergers in the EU.<sup>49</sup> Our study attempts to test whether the claim that technology companies acquire rivals with the sole aim of terminating their operations withstands scrutiny.

### III. Methodology

This paper studies a sample of cases susceptible to constitute killer acquisitions. We describe hereafter (1) the method used to select the cases, and (2) our tests of competitor perception and competitive position.

#### 1. Case selection

We start by compiling a complete list of all business transactions within the information technology sector using the EC's official register of merger transactions. To focus on this sector, we search transactions with the following industry-specific (NACE) codes: J.58 (publishing activities), J.61 (telecommunications), J.62 (Computer programming, consultancy and related activities), and J.63 (Information service activities). We retrieve a total of 387 cases.

Because the theory of killer acquisitions focuses on large technology firms, we restrict the search to transactions involving Google, Amazon, Facebook, Apple, and Microsoft. All five firms have

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<sup>43</sup> Sai Krishna Kamepalli, Raghuram Rajan, & Luigi Zingales, 'Kill Zone' (2020) NBER Working Paper No. 27146.

<sup>44</sup> Kevin A. Bryan & Erik Hovenkamp, 'Antitrust Limits on Startup Acquisitions' (2020) 56 Review of Industrial Organization 615.

<sup>45</sup> Cristina Caffarra, Gregory Crawford, & Tommaso Valletti, 'How Tech Rolls: Potential Competition and Reverse Killer Acquisitions' (*Competition Policy International*, 26 May 2020) <https://www.competitionpolicyinternational.com/how-tech-rolls-potential-competition-and-reverse-killer-acquisitions/>.

<sup>46</sup> Oliver Latham, Isabel Tecu, & Nitika Bagaria, 'Beyond Killer Acquisitions' (*Competition Policy International*, 26 May 2020) <https://www.competitionpolicyinternational.com/beyond-killer-acquisitions-are-there-more-common-potential-competition-issues-in-tech-deals-and-how-can-these-be-assessed/>.

<sup>47</sup> Kristen Limarzi & Harry S. Phillips, "'Killer Acquisitions,' Big Tech, and Section 2: A Solution in Search of a Problem' (*Competition Policy International*, 26 May 2022) <https://www.competitionpolicyinternational.com/killer-acquisitions-big-tech-and-section-2-a-solution-in-search-of-a-problem/>.

<sup>48</sup> Robert Kulick & Andrew Card, 'Mergers, Industries, and Innovation: Evidence from R&D Expenditure and Patent Applications' (NERA Economic Consulting Paper, February 2023) <https://www.uschamber.com/assets/documents/NERA-Mergers-and-Innovation-Feb-2023.pdf>.

<sup>49</sup> See, in the same vein, Max Berre, 'Killer Acquisition Theory in the Digital Age' (2021) SSRN [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3788536](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3788536).

been deemed to hold dominant or gatekeeping positions. This further screening yields 14 cases in total. We eliminate 3 of these cases. These concern joint ventures and are thus inappropriate for use in a study concerned with killer acquisitions. We thus focus on the remaining 11 cases.

We must disqualify again three cases, due to the fact that they were recently decided, and the final decisions are not yet published.<sup>50</sup> This yields an initial group of 8 cases : *Apple/Shazam* (M.8788), *Microsoft/LinkedIn* (M.8124), *Microsoft/Skype* (M.6281), *Facebook/WhatsApp* (M.7217), *Google/Fitbit* (M.9660), *Apple/Beats* (M.7290), *Microsoft/Zenimax* (M.10001), and *Microsoft/GitHub* (M.8994).

We extend the sample by adding a twist to the case selection. For each of our 8 cases, we draw a list of the rivals identified in the decision, insert the name of each rival in the EC register of cases, select the letter J for similar NACE codes and narrow down the list of results to transactions conducted by this rival after 2010.<sup>51</sup> For example, with regards to *MS/Zenimax*, this exercise allows us to consider transactions involving the rivals Electronic Arts, Nintendo, Activision, Ubisoft, and Take-Two Interactive between 2010 - 2022 and registered under the "J" NACE code. The procedure generates one transaction, that is *Activision/King*. We apply the same manipulation to all other cases and rivals.<sup>52</sup> Following this method, we find 5 more transactions. These are *SAP/Sybase* (2010), *Oracle/Micros* (2014), *Activision/King* (2016), *Verizon/Yahoo* (2016), and *Oracle/Cerner* (2022). We eliminate *Oracle/Cerner* because the final decision is not yet published.<sup>53</sup>

The sample appears to be a reasonable dataset to test the killer acquisition narrative. 5 out of 12 transactions involved turnovers below the threshold for EC merger review.<sup>54</sup> This is in line with the killer acquisition narrative whereby such acquisitions “*disproportionately occur just below thresholds for antitrust scrutiny.*”<sup>55</sup> Moreover the small number of cases in our sample is not a big issue conditional on selecting the right cases. In fact, a recent trend in the economic literature on the *ex post* evaluation of mergers consists in studying limited examples by application of the “*case studies*” methodology. Our work should be read as one more contribution to this approach.

## 2. Tests

In all 12 cases, the EC decisions mention the targeted firm’s rivals. We can retrieve financial disclosure information for these rivals in all 12 cases.<sup>56</sup> 31 of such rivals are indeed public firms

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<sup>50</sup> These cases are *Meta/Kustomer* (M.10262), *Amazon/MGM* (M.10349), and *Microsoft/Nuance* (M.10290).

<sup>51</sup> So that it is possible to gather data on sales - most companies do not have data pertaining to the 2000s.

<sup>52</sup> *Apple/Beats* - JVC (no deals), Sony (no deals); *MS/LinkedIn* - SAP (1 deal: Sybase), Oracle (2 deals: Cerner and Micros); *Google/FitBit* (no deals); *MS/Skype* - Yahoo (1 deal: Yahoo acquired by Verizon); *Facebook/WhatsApp* - Tencent (1 deal, but simplified procedure, no market definition or competitor identification); *Apple/Shazam* - No deals; *MS/GitHub* - no deals.

<sup>53</sup> Case M.10643 *Oracle/CERNER* [2022].

<sup>54</sup> These are *Apple/Beats*, *Microsoft/Zenimax*, *Microsoft/GitHub*, *Apple/Shazam*, and *Facebook/WhatsApp*.

<sup>55</sup> Cunningham, Ma, & Ederer (n 2) 685.

<sup>56</sup> In addition, where needed, supplementary information in the form of market shares, consumer usage data, and popularity metrics can also be obtained to help construct a fuller picture of competitive changes in markets after an acquisition took place.

issuing lengthy 10-K reports (or 20-F reports for foreign companies) to the SEC annually. When this is not the case, we search for similar disclosure information. For example, Deezer, mentioned in the EC *Apple/Shazam* case as a competitor was not publicly traded at the time of the acquisition. Deezer went public a few years later, and as part of that was bound to disclose similar information in its merger prospectus.<sup>57</sup> We can use such disclosure information as a proxy for 10-Ks or 20-F.

Qualitative and quantitative disclosure information allows us to develop simple tests for the three questions that motivate our study. First, to assess whether the target's product is dead or alive, we can read the 10-K sections where reporting firms are asked to describe their competition (in Item 1 – Business and/or sections on Risk Factors). The *post-merger rival perception* test consists in establishing whether post-acquisition, the target firm or product is still perceived as a competitor. This is satisfied if there is reference to the target firm or product as part of the merged entity.

Second, we can assess the post-merger competitive situation by looking at sales data in 10-K reports. The test consists in studying the sales of competitors of the merged entity to evaluate the post-merger competitive landscape. This *post-merger rival sales* test produces insightful information signals on whether the transaction killed competition.

Third, we can search the disclosure data for industry events that should correlate with rising competition. We focus on three *post-merger competitive events*, namely new product introduction, new firm creation, or competitors going public.<sup>58</sup>

The three tests are intended to draw a picture of competition in the post-merger world. By applying them, we get an understanding of competitive perception, positions, and disruptions in the relevant market. We can then obtain insights into the strength of the killer acquisition conjecture.

Note that all the cases in our sample would likely lead to more intervention if existing merger policy was adjusted to be made more aggressive (for example, by a reversal of the burden of proof or a presumption against certain transactions). Our work is an attempt to document whether a more aggressive merger policy is warranted, by looking at the risk of mistake if it was applied on past cases. In other words, we get hints into the rate of decisional error of a merger reform that would implement the killer acquisition conjecture.

## **IV. Results**

### **1. Post-merger Rival Perception**

In the 12 transactions that we study, the EC identified one (or more) key product(s) from the target entity. For each transaction, we retrieve the key target product(s) mentioned by the EC, as well as identified rivals. We then check whether, post transaction, rivals' disclosures mention the key product of the target. The Yes/No (Y/N) test allows an inference that the target product is not

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<sup>57</sup>See [Merger-prospectus-31.05.22.pdf \(deezer-investors.com\)](#)

<sup>58</sup> We focus on either expansion of an existing competitor or entry of a new firm in the product market concerned by the merger.

discontinued in the post-merger world. As such, the test corresponds to the “termination prong” of the definition of killer acquisitions given by Cunningham *et al.*

The post-merger rival perception test is useful. It is rare for reporting firms to mention competitors in 10-K documents. Firms tend to talk *abstractly* about competition in yearly disclosures, using boilerplate language. Observing firms’ *specifically* identifying competitors in 10-K documents after a transaction may prove insightful in terms of how participants perceive the evolution of competition in their industry.<sup>59</sup>

The post-merger rival perception test is implemented as follows. First, we gather annual reports (10-K, 20-F, or other equivalent reports for foreign firms) of publicly traded rivals in the 12 cases analyzed. Second, we narrow the search to reports issued in the preceding, coinciding, and following years, with the date of transaction as the point of origin. To illustrate, for the 2016 *Activision/King* transaction, we analyze annual reports of rivals issued for 2015, 2016, and 2017. The goal is to obtain a “before-after” evaluation of whether the acquired firm was and remains a competitor post-merger. Third, we focus on the “Risk Factor” and “Competition” sections found in the section titled “Item 1. Business” in annual reports. Fourth, we group all 12 cases into five categories. These categories correspond to the following: “Only Target” (transactions in which competitors mention only the target as a competitor in their 10-Ks); “Only Acquirer” (transactions in which competitors mention only the acquirer as a competitor in their 10-Ks); “Both” (transactions where both the target and the acquirer are acknowledged as competitors); “Non-responder” (transactions in which neither the target nor the acquirer are mentioned as competitors); and “Others” (transactions which display specific characteristics in terms of post-competitor perception). Table – I below displays the results of this exercise.

**Table – I: Post-merger Rival Perception Analysis**

<b>Only Target</b>	<b>Only Acquirer</b>	<b>Both</b>	<b>Non-responder</b>	<b>Others</b>
2	2	3	2	3
<i>SAP/Sybase</i> <i>Verizon/Yahoo</i>	<i>Microsoft/Skype</i> <i>Microsoft/LinkedIn</i>	<i>Google/FitBit</i> <i>Activision/King</i> <i>Oracle/Micros</i>	<i>Apple/Beats</i> <i>Apple/Shazam</i>	<i>Microsoft/Zenimax</i> <i>Microsoft/GitHub</i> <i>Facebook/WhatsApp</i>

The results suggest that, in seven cases, the rivals keep perceiving either the target or the acquirer as a competitor; Specifically, the post-transaction world reveals that rivals of the merged entity

<sup>59</sup> We prudently note that relying solely on firms’ declarations to determine whether they face competition from other firms is vulnerable to gaming. Specifically, firms can deliberately argue that a particular product or service offered by a competitor exerts pressure on them. In competition proceedings, firms generally have an incentive to portray their markets as subject to cutthroat competition. However, this is not the case in the context of 10-K reporting, where the incentives for disclosing firms are skewed towards showing profitability and growth, leading to reporting that tends to discount the competition. At any rate, taken together with the results of the remaining tests, the post-merger rival perception test yields useful indications.

continue viewing either the target or the acquirer as their competitor. Three transactions appear to have prompted rivals to perceive both the target and the acquirer as a competitive force. By contrast, in three of the cases analyzed, rivals give no attention to the merger. The remaining three cases are somewhat ambivalent regarding the change in the rivals' perception of rivalry. We discuss this phenomenon further below.

#### A. Only Target

We observe that in two cases, the target firm was mentioned by at least one rival as a competitor. For example, in *SAP/Sybase*<sup>60</sup>, Oracle, one of the chief rivals of SAP in the market for enterprise application software, identified Sybase as a competitor as early as 2009.<sup>61</sup> By contrast, another principal rival of SAP, Microsoft, did not recognize Sybase as a competitor in 2009. However, starting with the year of acquisition, Microsoft consistently acknowledged Sybase as a competitor. Indeed, in its 10-Ks issued at the end of fiscal years 2010 and 2011, Microsoft mentioned Sybase as a competitor in offering business intelligence and database services.<sup>62</sup> Interestingly, Microsoft did not refer to SAP or its acquisition of Sybase. This might suggest that Microsoft does not perceive Sybase as the victim of a “kill” by SAP. A similar observation applies to *Verizon/Yahoo*.<sup>63</sup> In that case, The New York Times refers to Yahoo News as a source of competition before, during, and after Yahoo's acquisition by Verizon.

#### B. Only Acquirer

In two cases, rivals recognize competition from the acquirer. In *Microsoft/Skype*, the EC identified Google, Yahoo, and AOL as potential competitors of the merged entity in the CRM software solutions market. Before the acquisition, all three rivals recognized Microsoft as a powerful competitor. This continued after the transaction. For example, after the acquisition, Google stated that it competes with Microsoft as a “*commercial software company*”, through various channels such as the use of stand-alone mobile applications (like Skype) “*embedded*” in operating systems.<sup>64</sup> Similarly, Yahoo and AOL also continued recognizing Microsoft as a strong rival after the acquisition.

In *Microsoft/LinkedIn*, the EC identified Adobe, Oracle, Salesforce, and SAP as competitors. Whereas none of these firms recognized LinkedIn as a competitive threat, they did perceive Microsoft as such. In the case of Oracle and Adobe, the threat of Microsoft was present throughout the three years. By contrast, SAP only started acknowledging Microsoft as a rival after the transaction, in its 20-F report issued for fiscal year 2017.

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<sup>60</sup> Cleared in 2010.

<sup>61</sup> Oracle 10-K Report, 2009, page 11.

<sup>62</sup> Microsoft 10-K Reports, 2010 and 2011, pages 6.

<sup>63</sup> Cleared in 2016.

<sup>64</sup> This case, Google recognized Microsoft as a threat due to Microsoft's potential to integrate the target with its main product (Windows) and leverage its power.

### C. Both the Target and the Acquirer

A quarter of our cases concern transactions where rivals mentioned both the target and the acquirer as competitors. In *Google/FitBit* (2020), Garmin identified FitBit as one of its principal competitors.<sup>65</sup> After the acquisition was completed, Garmin continued to refer to FitBit as a competitor, albeit with Google written in brackets next to it.<sup>66</sup> According to Garmin, FitBit thus continues to operate as a competitor and was therefore not “killed” by Google.<sup>67</sup>

In *Activision/King* (2016), the EC decision identified Electronic Arts, Ubisoft, Take-Two Interactive, and Nintendo as rivals in the video game publishing market. Before the acquisition, none of the rivals recognized King as a competitor. By contrast, all of them include Activision Blizzard as a powerful competitor. After the acquisition, rival perception changes slightly. Ubisoft now refers to “Activision Blizzard King” as a source of competitive pressure in its 2017 annual report.<sup>68</sup> One possible interpretation is that the merger bolstered the perception of King as a competitor in the video game publishing market.

In *Oracle/Micros* (2014), the EC decision identified IBM, NCR, and Diebold Nixdorf as rivals in the enterprise application software market. NCR had already identified Micros as a competitor. By contrast, NCR did not recognize Oracle as its competitor in 2013. From 2014, NCR started to refer to Oracle as a competitor alongside Micros. In 2015, NCR also identified both Micros and Oracle as competitors. In 2016, NCR mentioned the acquisition of Micros by Oracle. In 2016, when listing its competitors, it implicitly referred to the acquisition by referring to Micros with Oracle in brackets.<sup>69</sup> This is like Garmin’s recognition of FitBit as continuing operations under the control of Google. It suggests that, in NCR’s view, the acquisition of Micros by Oracle did not kill the target, but instead widened the competition NCR faced by introducing Oracle into the picture.

### D. Neither the Target nor the Acquirer

In two cases, rivals did not perceive the target or the acquirer as a competitor. Both transactions involve Apple. In *Apple/Beats* (2014), the EC identified Sony and JVC as rivals in the supply of headphones. Neither of them mentioned Apple or Beats as competitors in their reports.<sup>70</sup> In *Apple/Shazam* (2018), the EC identified Musixmatch, SoundHound, and Deezer as rivals in music

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<sup>65</sup> Garmin 10-K Reports, 2019 and 2020, pages 13 and 10, respectively.

<sup>66</sup> Garmin 10-K Report, 2021, page 10.

<sup>67</sup> In fact, the inclusion of Google in brackets may be taken as corroborating evidence for an alternative explanation. It may have been that the motivation for the FitBit acquisition had to do with the power rivals yield in the wearables market, and Google’s previously non-existent position. Google may have wanted to enter that market by acquiring an already-made team and product, rather than having to develop everything from scratch in-house. Data on market shares support this alternative scenario. Indeed, as explored below, the acquisition of FitBit succeeded at least a three-year long decline in Google’s share in the wearables market. After the acquisition, the shares have stabilized, hinting at the prospect that acquiring FitBit has stopped the bleeding for Google in the wearables market, at least for the time being.

<sup>68</sup> Ubisoft Annual Report, 2017, page 22.

<sup>69</sup> NCR 10-K Report, 2016, page 14.

<sup>70</sup> That may indeed stem from a relative disregard of the transaction. Alternatively, one can argue that these large Japanese firms did not view an acquisition by Apple in headphones market as a large enough development, since headphones comprised a sliver of their business operations.

recognition apps. None of these competitors being publicly traded at the time, it is impossible to tease out the impact of the merger on competitor perception.<sup>71</sup>

### *E. Others*

Three transactions displayed peculiarities which caution against using them for our test. *Facebook/WhatsApp* (2014) should be classified under the “Both the Target and the Acquirer” tab. But the case is not informative because most competitors identified by the EC in consumer communications services market were either Asian firms (WeChat (Tencent), QQ (Tencent), LINE (NHN Japan/LINE Corp.) or non-publicly traded ones (Snapchat, Telegram, and Signal).<sup>72</sup> Snapchat issued its first annual report as late as 2018, and consistently identified both Facebook and WhatsApp as competitors since then.

*Microsoft/GitHub* (2018) should also be classified under the “Both the Target and the Acquirer” tab.<sup>73</sup> Both identified competitors Atlassian and GitLab recognized Microsoft and GitHub as strong competitors in source code hosting services for control.<sup>74</sup> But both competitors only went public recently. In the presence of this limiting factor, we decided to exclude the transaction.

*Microsoft/Zenimax* (2021) was only cleared recently. Because it is rather recent, we were unable to gather sufficient data on competitor perception in the market for the digital publishing of video games.<sup>75</sup>

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<sup>71</sup> Since then, Deezer and SoundHound completed their IPOs in 2022. We note, however, that in its Merger Prospectus, Deezer highlighted Apple as a strong competitor. See Deezer, Merger Prospectus, page 74, <https://www.deezer-investors.com/wp-content/uploads/2022/06/Merger-prospectus-31.05.22.pdf>.

<sup>72</sup> We note, however, that Snapchat consistently identified both Facebook and WhatsApp as competitors since it started issuing 10-K reports.

<sup>73</sup> Even though source code hosting services for control was offered as a potential relevant product market, the designation was nevertheless left open due to two factors: there was no uniform understanding of what that definition corresponds to in the industry, and the transaction was viewed as compatible with the internal market in both narrower and wider forms of that definition.

<sup>74</sup> GitLab explicitly acknowledges the transaction and recognizes Microsoft as its “principal competitor”. See GitLab, Inc. 10-K Report, 2022, page 17.

<sup>75</sup> Nevertheless, we observe a general lack of interest on behalf of the competitors concerning the transaction. Microsoft itself was mentioned often. However, Zenimax was completely missing. Another factor that renders this transaction peculiar is as follows. In its 10-K report issued in March 2022, Electronic Arts does not refer to the acquisition of Zenimax by Microsoft. However, it does refer to other acquisitions of its competitors, such as the proposal by Microsoft to acquire Activision Blizzard (currently under review) and Take-Two's acquisition of Zynga Games. These references do not relate to a concern of “killing”. Rather, the EA is worried that large and well-funded tech companies such as Microsoft and Take-Two are strengthening their capabilities in the game publishing market. Similar to EA, Take-Two interactive also does not mention the acquisition of Zenimax. However, it refers to recent consolidation in the industry, explicitly singling out the proposed acquisition of Activision Blizzard by Microsoft. Again, its concern stems from a potential increase in the capabilities of large players like Microsoft to compete in the gaming sector.<sup>75</sup>

The results of our post-merger rival perception test are useful. As Cunningham *et al.* show, one component of killer acquisitions is a deliberate termination of the target’s operations post-merger. Our results indicate limited support for the idea that large technology companies purchase nascent competitors to “kill” them. In five cases, rivals in the relevant market where an acquisition took place have continued to view the target as a viable competitor. In more cases than few, the transaction was perceived to have enhanced, not limited, competition. In cases like *Oracle/Micros*, *Activision/King*, and *Google/FitBit*, rivals reported a post-merger strengthening of competition from targets. We would have reason to suspect a killer acquisition if rivals that viewed the target as a rival, ceased to do so following the transaction. We did not observe this in our dataset.

## 2. Post-Merger Rival Sales

### A. Methodology

Sales of the merged firm’s rivals give insights on the post-merger competitive landscape. We use 10-K data or annual reports for each identified rival to compute post-merger sales on a year-over-year (“YoY”) basis. We refer to this as the “sales of identified competitors” (“SIC”) test. As killer acquisitions concern preemption of future competition, we would expect to observe a decrease in industry output following a suspicious transaction. The SIC test gives us a proxy to study whether this is the case.

It is not easy to find sales that relate to the relevant market in financial disclosures. Sales are often reported at the firm level. In diversified firms, reported sales will not correspond to sales in the relevant market considered in the EC decision. With this limitation in mind, three options exist to derive sales data indicative of the post-merger competitive landscape. First, we can use firm level sales, and observe changes in the distribution of sales amongst firms following the merger transaction. This approach is easy to implement, but obviously inaccurate. We thus discard it. Second, we can use product-level sales that correspond to the relevant market considered in the EC decision. This approach is accurate, but costly to implement. Firms do not disaggregate sales in line with relevant markets in an antitrust sense. In our dataset, no case clearly comprises sales data related to a relevant market.<sup>76</sup> Third, we can focus on “reporting segments” in annual reports, which aggregate related lines of business under a common umbrella. Segment data give a better idea of competitive sales than total revenue. But segment data does not completely remove all noise, as sales of related products are often lumped together in most segments.<sup>77</sup>

With these limitations in mind, we use segment data as the basis of our analysis and focus on sales generated by rivals on a YoY basis.<sup>78</sup> We examine sales growth and sales distribution amongst rivals. We believe analyzing segment-level data yields three relevant information signals. First,

<sup>76</sup> The case that comes closest to this ideal is Apple/Beats, in which the product market was delineated as “supply of headphones”. Even in that case, the most granular data we could derive from annual reports relate to the sales of “accessories”, “IoT devices”, or “Audio”.

<sup>77</sup> For instance, where the identified antitrust product market is the sale of headphones, an analysis based on the “Wearables” segment fails to eliminate sales figures for fitness trackers or smart watches.

<sup>78</sup> The sales data and YoY growth are available under the Appendix.

the evolution of segment level sales of the industry conveys information on the “kill”. To be more accurate, an increase in segment-level sales in the industry indicates that the kill (if any) is not as problematic as might be thought because it is followed by growth, not decline. Second, the evolution of SIC gives us an idea of whether there is competitor expansion or not in response to the merger. As noted, segments lump together sales of different but *related* products. Thus, rival expansion at the segment level indicates growth in substitutes *or* complements, and both suggest the merger was unproblematic. The economic intuition is easy to understand. Growth in substitutes indicates rising rivalry, and growth in complements indicates absence of killing.<sup>79</sup> Third, the evolution of segment-level sales amongst SICs indicate whether there is intensified rivalry in response to the merger. To be more accurate, if segment-level sales amongst rivals to the merged entity fluctuate, it is likely that the reallocation of sales is the result of an active process of competition that is taking place amongst the non-merging firms in the corresponding segment. In accordance with the foregoing, we show the results of the SIC test for 9 transactions in relation to the three information signals.<sup>80</sup>

### B. Implications

The post-merger rival test produces several useful results. We now know that there has been rival expansion in response to the merger in 6 out of 9 cases. And we learn that transactions have been followed by competition for share amongst rivals of the merged entity in 6 out of 9 cases.

In 3 cases, we observe a decrease in industry output: *Apple/Beats*, *Verizon/Yahoo*, and *Google/FitBit*. We can discard *Google/Fitbit*. The main driver of output reduction in that case is Huawei, whose sales nearly halved after the merger, likely due to the ban of the company in the US.<sup>81</sup> Disregarding Huawei, we observe that the evolution of rivals’ shares is not even in *Google/FitBit*. While Xiaomi and, more importantly, Apple experienced growth, others like Samsung and Garmin have seen their shares fluctuate, with Garmin stagnating and Samsung receding. This suggests effective competition.

In *Verizon/Yahoo*, the primary contributors to the reduced industry output were the NYT and Axel Springer AG. By contrast, Thomson Reuters increased its revenues in terms of digital finance content. It is unclear whether Verizon’s acquisition of Yahoo played a role in this slump. This is because the industry went through other events that might have had an impact on decreased revenues. For instance, the NYT introduced a stricter paywall in 2017 for its digital content.<sup>82</sup>

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<sup>79</sup> If there was a killing of competition understood as substitutes, harm to complements using the substitute should also obtain.

<sup>80</sup> We exclude *Microsoft/GitHub*, *Apple/Shazam*, and *Facebook/WhatsApp* from this analysis. Microsoft/GitHub was completed in 2018 and the competitors (Atlassian and BitBucket) have gone public only very recently, thus making it an inappropriate case to derive observations from. *Apple/Shazam* suffers from a shortage of sales data, as rivals the EC identified had gone public only very recently. *Facebook/WhatsApp* represents an outlier in the sense that the rivals identified by the EC are either geographically specialized (LINE, QQ, WeChat) or non-profit (Signal, Telegram).

<sup>81</sup> In this case, the drop in industry sales cannot be attributed solely to an acquisition made by a competitor. See, ‘Sanction-hit Huawei says revenues down 29% this year’ (*The Guardian*, 31 December 2021) <https://www.theguardian.com/technology/2021/dec/31/sanction-hit-huawei-says-revenues-down-29-this-year> accessed 6 December 2022.

<sup>82</sup> Sara Guaglione, ‘New York Times’ Tightens Metered Paywall’ (*MediaPost*, 1 December 2017) <https://www.mediapost.com/publications/article/310971/new-york-times-tightens-metered-paywall.html> accessed 23 December 2022. Given that

*Apple/Beats* presents a more interesting study. At first glance, the case fails both of our tests. Total output in the market in 2021 is at a lower figure than in 2013. Furthermore, it appears that sales have dropped following the merger. However, we note that sales have been dropping in the years preceding the merger as well, and the further decrease we observe may simply be an extension of this overall trend. Nevertheless, we also note that, under the rival perception test, neither Sony nor JVC acknowledged Apple or Beats as a rival. These findings do not readily advocate for labelling the transaction as anticompetitive, but we note that the case, as it stands, is the one raising the most suspicion in our dataset.

In the remaining six cases, we observe an increase in industry output. In some cases, the increase in output was the result of a rival expanding at the expense of others. For example, in *SAP/Sybase*, we observe that Microsoft managed to steadily increase its market share. By contrast, Oracle registered lower market share growth and a gradual decline towards the end, landing around the same level it occupied before the transaction. The hardest hit competitor was IBM. Over the seven years analyzed, IBM consistently lost market share to the benefit of competitors, mainly Microsoft. This indicates heightened competition in the market post-acquisition and does not necessarily imply a competitive kill.<sup>83</sup> Similarly, in *Microsoft/Skype*, we observe that a large part of industry growth post-merger was attributable to Google. By contrast, Yahoo and AOL gradually lost market shares over time, both ending up with sub-10% shares. These observations suggest that output increased in a manner consistent with cutthroat competition, in which winners emerge and dominate their rivals.

We acknowledge that some cases have been decided relatively recently and are thus not suitable for deriving many conclusions. For instance, both *Google/FitBit* and *Microsoft/Zenimax* are recent transactions. As such, they present limited opportunities in terms of the conclusions they can produce. Nevertheless, we include these cases as candidates to revisit in the upcoming years to better evaluate the competitive landscape post-acquisition. Notably, with the available data in mind, both cases produced industry growth after the transactions were consummated.

In summary, in very few cases, a merger appeared to have been followed by a weakening, let alone a killing, of competition. The competitive landscape post-merger remained vibrant in most cases, invalidating one key condition required for the killer acquisition conjecture to hold.

Whereas the evidence seems hardly sufficient to support a killer acquisition narrative, we observe a likelier outcome for a different theory. As explained above, in most cases, the post-transaction world involved some competitors increasing their sales at the expense of others. This means that, at least in some cases, there was a trend of increasing concentration. Thus, post-merger oligopolization becomes a viable theory for those cases. What motivates this trend may be

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increasing cohorts of consumers look for finance content online, these practices may have had an impact on the NYT's diminished revenue in terms of digital finance content. See '2019 research review: Traditional industries are transforming with digital' <https://www.thinkwithgoogle.com/data-collections/mobile-search-statistics/> accessed 23 December 2022. We also note that Verizon itself admitted the fact that its acquisition of Yahoo and AOL proved unfruitful. See Verizon 10-K report, 2021, p. 73.

<sup>83</sup> SAP also continued to explicitly refer to Sybase's services in its 20-F reports.

intensified organic competition or competitors completing their own acquisitions. For the purposes of our third (and last) test below, we consider the extent to which competitors respond to the acquisitions of their rivals by carrying out their own purchases.

### 3. Post-merger Competitive Events

Our third test asks whether the merger was followed by an external shock likely to denote increased competition. We investigate the dataset for three types of events: new product introduction, new firm creation, or rival transformation. We try to answer by a simple yes or no, for each type of event. The economic intuition is a simple one. A killer acquisition supposes a diminution of competition in the future. A post-merger market that displays rival entry, product innovation, or firm expansion, is incompatible with a killer acquisition.

To operationalize the test, we proceed as follows. The new product introduction event can be observed by looking, for each transaction, at all subsequent EC decisions concerning the same relevant market, and check whether a widening of the market definition can be observed. The new firm creation event can be observed by looking, for each transaction, at all subsequent EC decisions concerning the same relevant market, and check whether the EC identified a new competitor. The rival transformation event can be looked at by asking whether an identified competitor has gone through an IPO or an M&A transaction. We display the results of this test in the following Table – II which indicates whether the three different events have been met or not in each case.

**Table – II: Post-merger Competitive Events Analysis**

<b>Transaction/Events</b>	<b>New Product introduction?</b>	<b>New Firm creation?</b>	<b>Rival Transformation?</b>
<i>SAP/Sybase</i>	N	N	Y
<i>Microsoft/Skype</i>	Y	Y	Y
<i>Apple/Beats</i>	N	Y	N
<i>Oracle/Micros</i>	N	N	Y
<i>Activision/King</i>	N	N	N
<i>Microsoft/LinkedIn</i>	N	N	Y
<i>Verizon/Yahoo</i>	N	N	N
<i>Google/FitBit</i>	N	N	Y
<i>Microsoft/Zenimax*</i>	N	N	N

For *SAP/Sybase*, the first two events have not happened, whereas the third event is observed. In terms of subsequent EC decisions, we note that the relevant market becomes increasingly narrower as opposed to *SAP/Sybase*, which adopted “enterprise application software” (“**EAS**”) as its relevant market. Some cases like *Microsoft/Nokia* adopted “mobile productivity apps” as the relevant market, a sub-segment of EAS. In others, the EC considered whether the EAS market could be segmented in terms of industry.<sup>84</sup> In general, the EC seems unfriendly towards defining

<sup>84</sup> For instance, *IMS/CEGEDIM* considered the relevant product market as “enterprise application software for healthcare businesses”. See, Case M.7337 *IMS Health/CEGEDIM* [2014].

the market as EAS, and favors segmentation, often against the wishes of merging parties.<sup>85</sup> In recent cases, we observe greater focus in terms of relevant markets, as segments of EAS themselves are dissected into sub-segments.<sup>86</sup> These results suggest that the industry has become increasingly specialized following the acquisition. We note that such specialization coincides with acquisitions completed by competitors. Indeed, both Oracle and Microsoft made acquisitions in segments of the EAS market. For instance, Oracle acquired Micros, whereas Microsoft purchased Nokia, LinkedIn, and Nuance. By contrast, we do not find any developments for IBM. Indeed, IBM has experienced decreased sales in all cases it featured in. We thus observe IBM to be struggling against its rivals across the board.

For *Microsoft/Skype*, we observe that all three events have been met. In *Microsoft/Skype*, the EC identified “video calls” as a plausible product market. Subsequent decisions that discuss this market are *Microsoft/Nokia*, *Facebook/WhatsApp*, and *Verizon/Yahoo*. We note that in the *Nokia* and *WhatsApp* acquisitions, the EC constructed a broader market titled “consumer communication apps”. It explicitly noted that, in light of the transforming consumer demand, it is inappropriate to define the relevant market in terms of functionality (video communications, VoIP communications, etc.). Instead, as consumers demand a single package containing multiple communication functionalities, the EC opted for a broader market. Furthermore, in the market for consumer communication apps, the EC identified new competitors. For instance, in *Microsoft/Nokia*, the EC considered Apple (iMessage and FaceTime), WeChat, and Tango as new competitors. In *Facebook/WhatsApp*, the EC added Viber and Snapchat to the list of firms competing within the consumer communication apps market. We note that competitors identified within the original *Microsoft/Skype* decision completed their own acquisitions, with notable events including *Facebook/WhatsApp*. Lastly, due to the COVID-19 pandemic, demand for video calls soared exponentially. This led to significant transformations in the market, with new players quickly entering and gaining market share, notably Zoom. Zoom has also completed its initial public offering in 2021.<sup>87</sup>

There is only one subsequent decision concerning *Apple/Beats*, which considered the “supply of headphones” as the relevant market. In this very recent case (decided in 2022), Hewlett-Packard (“HP”) acquired Plantronics (“Poly”), a communications technology company that produces, among others, headsets.<sup>88</sup> This case produces negative results for the first and third test, and a positive result for the second test. In the decision, the EC left the relevant market open. However, it considered that the “supply of headphones” continues to prove valid as a relevant product market. At the same time, the EC expressed that it may be appropriate to differentiate headphones according to usage (business, gaming, etc.). In any case, there was no discussion of widening the market, which fails the first test. Furthermore, we were unable to locate any acquisitions made by

<sup>85</sup> See, e.g., Case M.8984 *HG/Vista/Allocate* [2018]; Case M. 9447 *Hitachi/ABB* [2020].

<sup>86</sup> Case M.100060 *Francisco Partners/MEP/CONAN Holdco* [2021]; Case M.10290 *Microsoft/Nuance* [2021].

<sup>87</sup> Nadine F. Mendoza, ‘Zoom zips ahead of Google Meet, Microsoft Teams and Skype in one ranking’ (*Tech Republic*, 31 March 2021) <https://www.techrepublic.com/article/zoom-zips-ahead-of-google-meet-microsoft-teams-and-skype-in-one-ranking/> accessed 24 December 2022.

<sup>88</sup> Case M.10737 *HP/Poly* [2022].

JVC or Sony relating to headphones, after Apple acquired Beats. This is unsurprising as neither rival identified Apple/Beats as a competitor in their annual reports. As regards the second test, the *HP/Poly* deal identified Logitech and Jabra as competitors. This means that new firms have been created or entry has occurred, which satisfies the second test.

*Oracle/Micros* concerned the enterprise application software market. This is identical to the one considered in *SAP/Sybase*. Thus, our findings in *SAP/Sybase* regarding the first and second events hold for *Oracle/Micros* as well (narrower market definition and no new competitors). As regards the third event, we observe a strong response in terms of competitors' merger activities. The data suggest that the acquisition was a component of an ongoing merger wave in the industry. We note that half the competitors identified in the EC decision were themselves shortly acquired. For example, Epicor was taken private by KKR Investments, one of the largest private equity firms. Panasonic acquired JDA, and Salesforce purchased Demandware. We further observe that the Epicor and Demandware acquisitions were completed in the same year as the present transaction (2014). These deals may have been triggered by the earlier *SAP/Sybase* acquisition. Oracle's acquisition of Micros may thus have been attempt to keep up with its rivals in the market for corporate control.

For *Activision/King*, which concerned the "game publishing" market, we retrieve two relevant transactions. The first case, *Tencent/Supercell OY*, was cleared in accordance with the simplified procedure, thus producing limited information.<sup>89</sup> The second case is *Microsoft/Zenimax*. In that case, the EC conducted a market investigation to find out whether it is appropriate to segment the game publishing market according to genres, type (AAA, casual, freemium, etc.), and platform (Xbox, Playstation, PC). The EC was unconvinced and thus decided to keep the broader market as relevant. The EC also did not identify new competitors. Furthermore, none of the rivals considered in *Activision/King* made any acquisitions between 2016-2022. These findings imply that all three of our events did not happened.<sup>90</sup>

*Microsoft/LinkedIn* concerned the "CRM software solutions" market, which is a segment of enterprise application software market considered in *SAP/Sybase* and *Oracle/Micros*. Three decisions following the present merger focused on the CRM software solutions market. In some of these cases, the market was left unchanged.<sup>91</sup> By contrast, in recent cases we observe a further segmentation of the market.<sup>92</sup> In any case, there was no widening of the relevant market, which fails the first event. We also do not observe any new competitors identified by the EC.<sup>93</sup> This fails

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<sup>89</sup> Case M. 8090 *Tencent Holdings Limited/Supercell OY* [2016].

<sup>90</sup> We note, however, that the acquisition of Supercell by Tencent constitutes an important development. Even though Tencent was not identified as a competitor in either *Activision/King* or *Microsoft/Zenimax*, the acquisition of Supercell was comparable to the acquisition of King. This is because, whilst King was the most popular mobile game publisher in 2016, Supercell was a close follower occupying the second place. See, Case M.7866 *Activision/King* [2016], p. 10 (Table IV).

<sup>91</sup> Case M.8274 *Cinven/Permira/Allegro/Ceneo* [2016].

<sup>92</sup> E.g., in Case M.10385 *Genstar Capital/TA Associates/Compusoft* [2021].

<sup>93</sup> For instance, in analyzing Microsoft's recent acquisition of Nuance, the EC reiterated the competitors in the CRM market as Salesforce, SAP, Oracle, and Adobe.

the second event. In terms of the third event, we note that after the acquisition, none of the competitors made any acquisitions, whereas Microsoft itself acquired Nuance.

*Verizon/Yahoo* concerned the “digital mobile finance content” market. We could not retrieve another case that concerned the same product market. We also could not observe a wider market, such as “digital finance” or “mobile finance”. Thus, we have negative results for all three tests. However, we note that the acquisition of Yahoo (and AOL) by Verizon has not proven fruitful. Indeed, Verizon recently exited the digital mobile finance market by selling Yahoo to Apollo Global Management, a private equity firm.<sup>94</sup>

*Google/FitBit* considered the “wrist-worn wearable devices” as the relevant product market. We were unable to retrieve another decision considering competition in a similar relevant market.<sup>95</sup> Thus, our three tests remain unsatisfied. Nevertheless, we note that entry indeed occurred. Specifically, Imagine Marketing, with its boAt products, has emerged as a lower-end alternative. The company is prominently active in Asia and has recently completed its own acquisition of a Singaporean wearables producer.<sup>96</sup>

Lastly, *Microsoft/Zenimax* was completed in 2021. This means that the case is not very suitable for the purposes of this exercise. Nevertheless, the fast-growing gaming sector has been at the forefront of competition debates for some time.<sup>97</sup> Recently, Microsoft’s proposal to acquire Activision Blizzard King has attracted significant regulatory attention. In response, Sony has been developing in-house publishing studios to bolster its exclusive offers for the PlayStation platform.<sup>98</sup> More broadly, alternative techniques of competition have emerged, including cloud gaming and subscription-based models (e.g., Microsoft’s Xbox game pass).<sup>99</sup> These trends align with business model innovation frequently observed in gaming markets.<sup>100</sup> Lastly, we observe new players gaining prominence, such as CD Projekt Red from Poland (with its *Witcher* series) and CAPCOM from Japan (with its *Resident Evil* series).

## V. Conclusions

Our findings fail to support the killer acquisition conjecture. We show that the narrative is unsupported under all three tests of competitor perception, expansion, and disruption. Of course,

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<sup>94</sup> Brian Heater & Ingrid Lunden, ‘Apollo completes its \$5B acquisition of Verizon Media, known as Yahoo’ (*Tech Crunch*, 1 September 2021) <https://techcrunch.com/2021/09/01/apollo-completes-its-5b-acquisition-of-verizon-media-now-known-as-yahoo/> accessed 24 December 2022.

<sup>95</sup> Two decisions mention the term “wearables”, albeit in different industries, such as computer memories and aviation. See Case M.10059 *SK Hynix/Intel (NAND and SSD Businesses)* [2021]; Case M. 10506 *Parker/Meggitt* [2022].

<sup>96</sup> ‘India’s Imagine Marketing acquires Singapore’s KaHa to boost wearable products’ (*TechNode Global*, 18 January 2022) <https://technode.global/2022/01/18/indias-imagine-marketing-acquires-singapores-kaha-to-boost-wearable-products/> accessed 24 December 2022.

<sup>97</sup> Peter Zackariasson & Timothy L. Wilson, ‘Paradigm shifts in the video game industry’ (2010) 20 (2) *Competitiveness Review* 139.

<sup>98</sup> In-house publishing of games enhances social welfare. See, Tim P. Thomes, ‘In-house publishing and competition in the video game industry’ (2015) 32 *Information Economics and Policy* 46.

<sup>99</sup> Competition in modern gaming relies not only on creating attractive content but also on effective marketing and developing sustainable streams of revenue. To solve the revenue problem, nascent gaming teams may opt for merging with larger studios and producers. For an overview of the industry dynamics, see Joost von Dreunen, *One Up: Creativity, Competition, and the Global Business of Video Games* (Columbia Business School Publishing 2020).

<sup>100</sup> Francesco Lantano, Antonio M. Petruzzelli, & Umberto Panniello, ‘Business model innovation in video-game consoles to face the threats of mobile gaming: Evidence from the case of Sony PlayStation’ (2022) 174 *Technological Forecasting and Social Change* 121210.

the main limitation of our work is that we only study a small number of transactions. Importantly, we do not look at transactions below the jurisdictional thresholds necessary for them to be controllable under merger law, which is where some consider that the bulk of killer acquisitions happen. That being said, our work has two interesting policy implications. First, given that the killer acquisitions conjecture claims application in controllable transactions, we now know that there is no evidential basis to change the law to make it stricter. In most controllable cases, the EC correctly anticipated the post-merger evolution in the relevant market. There has been no under enforcement.

Second, if the narrative is for uncontrollable transactions, there is no evidential basis to support a change in the law unless one can establish that the competitive effects observed for controllable transactions do not hold under the jurisdictional thresholds of merger law. In other words, a reform of merger law would require proving that transactions involving firms with limited revenue are more susceptible to a "kill" than larger ones. At the time being, the only evidence that exists in support of this conjecture is intuitive. We may expect to find more anticompetitive mergers below the jurisdictional thresholds, because the sunk costs of shutting down a project will be smaller when the transaction involves a young firm.

Besides policy, our work calls attention to a more academic issue. A tenet of modern science is that if there is a theory, there should be a protocol to falsify it. A theory without falsification is a prophecy. Some believe that the killer acquisition story constitutes a theory. It cannot be unless it has been subject to the possibility of falsification.

Our paper has advanced falsification propositions for the killer acquisition narrative. The falsification propositions develop a series of null hypotheses, that is, hypotheses that would need to be proven wrong for the theory to hold. We tested all of them with case studies and found that the null hypotheses were rejected most of the time. At the same time, we cannot claim that the killer acquisition story does not hold, because our sample of decisions is small. Further research aims to focus on enlarging our sample of decisions by replicating the exercise for US merger decisions, and national merger cases from two EU Member States and the UK. Note that expanding into Member States cases will allow us to verify whether the effects observed for large transactions also hold for smaller transactions. Furthermore, our findings may be too sector specific. Be it as it may, our paper casts light on the possibility that current merger policy shifts in digital markets might be more based on belief, than evidence. And even if this conclusion appears overstated, we hope to have enriched the discussion by developing a falsification method for the killer acquisition narrative.

## APPENDIX

This appendix contains the analysis of sales made by the competitors of transaction parties before and after the acquisition took place. For each transaction, the sign “\*” denotes the year of EC approval. All sales figures are in millions USD. For non-US firms, we convert the revenue based on that year’s average exchange rate for the relevant currency.

### 1. SAP/Sybase

SAP acquired Sybase in 2010. The EC decision identified the relevant product market as “enterprise application software”.<sup>101</sup> In that market, the EC designated Microsoft, Oracle, and IBM as rivals of the merged entity. We compile sales data for each of these rivals. We show data from FY2009 to give a better sense of the evolution of market shares before-and-after the transaction. The results are provided in Table – III and Charts A1 and A2 below.

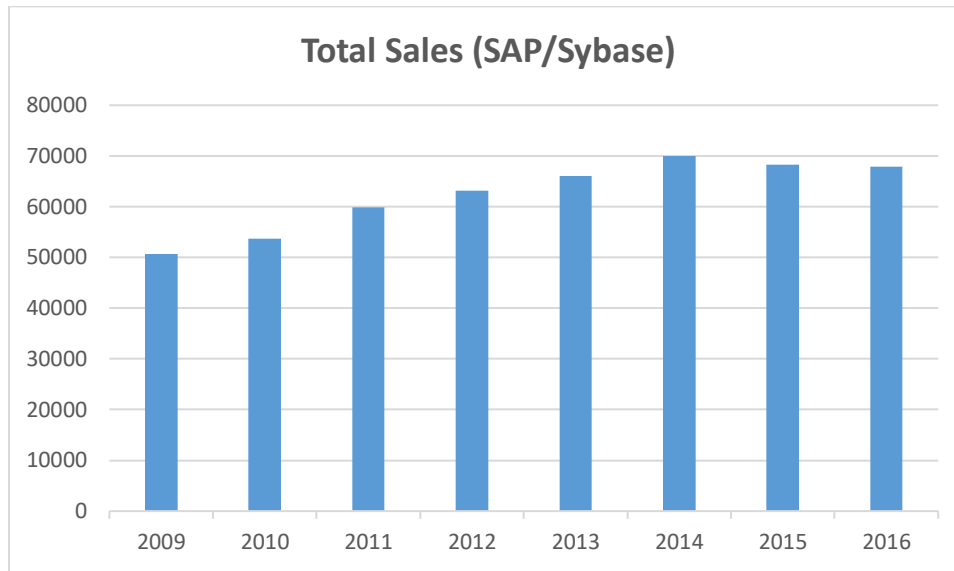
In the table, SIC 1, 2, and 3 represent Microsoft, Oracle, and IBM, respectively. For Microsoft, figures are taken from the “Server Tools” segment. For IBM, figures are taken from the “Global Business Services” segment, which includes enterprise application software. Figures for Oracle are based on its software business as differentiated from hardware. We compute Oracle’s software sales by aggregating two of its relevant business segments: “New Software Licenses” and “Software License Updates and Product Support” (the remaining segments relate to hardware).

**Table – III: SAP/Sybase Figures for the SIC Test**

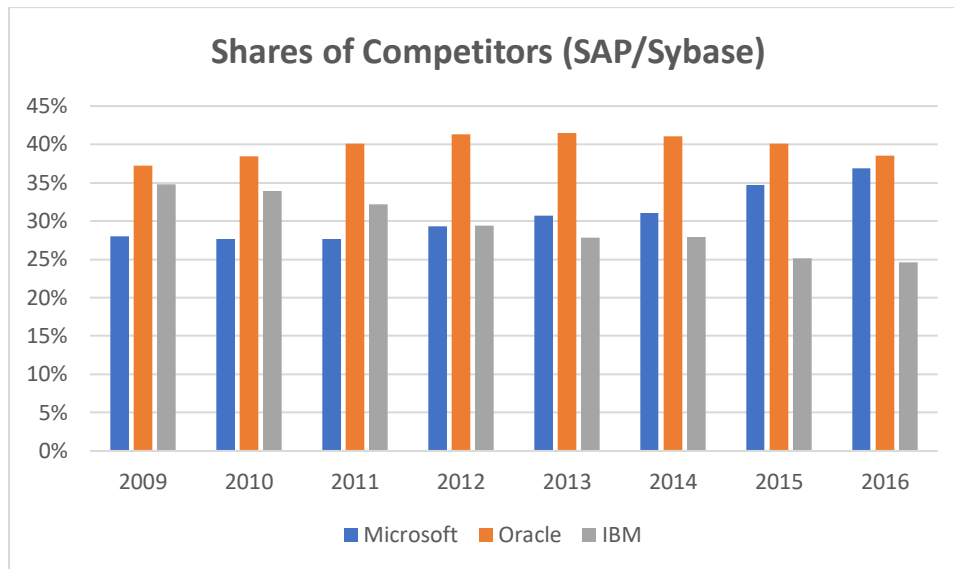
	<b>SIC 1</b>	<b>SIC 2</b>	<b>SIC 3</b>	<b>Total sales</b>	<b>MS of SIC 1</b>	<b>MS of SIC 2</b>	<b>MS of SIC 3</b>
<b>FY2009</b>	14191	18877	17653	50721	28%	37%	35%
<b>FY2010*</b>	14866	20625	18223	53714	28%	38%	34%
<b>FY2011</b>	16559	24031	19284	59874	28%	40%	32%
<b>FY2012</b>	18534	26116	18566	63216	29%	41%	29%
<b>FY2013</b>	20281	27373	18396	66050	31%	41%	28%
<b>FY2014</b>	21735	28743	19512	69990	31%	41%	28%
<b>FY2015</b>	23715	27382	17166	68263	35%	40%	25%
<b>FY2016</b>	25042	26137	16700	67879	37%	39%	25%

<sup>101</sup> Case No. COMP/M.5904 – SAP/SYBASE [2010].

**Chart – A1: SAP/Sybase Evolution of Total Sales**



**Chart – A2: SAP/Sybase Evolution of Competitor Market Shares**



## 2. Microsoft/Skype

In 2011, Microsoft acquired Skype. The EC decision identified the relevant product market as video call services. In that market, the EC considered the main rivals of the merged entity to be Windows Live Media (owned by Microsoft), ICQ (AOL), Google, and Yahoo. We compile sales data for each party. Our data starts from FY2010 to better reflect market circumstances before-and-after the transaction. The results are provided in Table – IV and Charts B1 and B2 below.

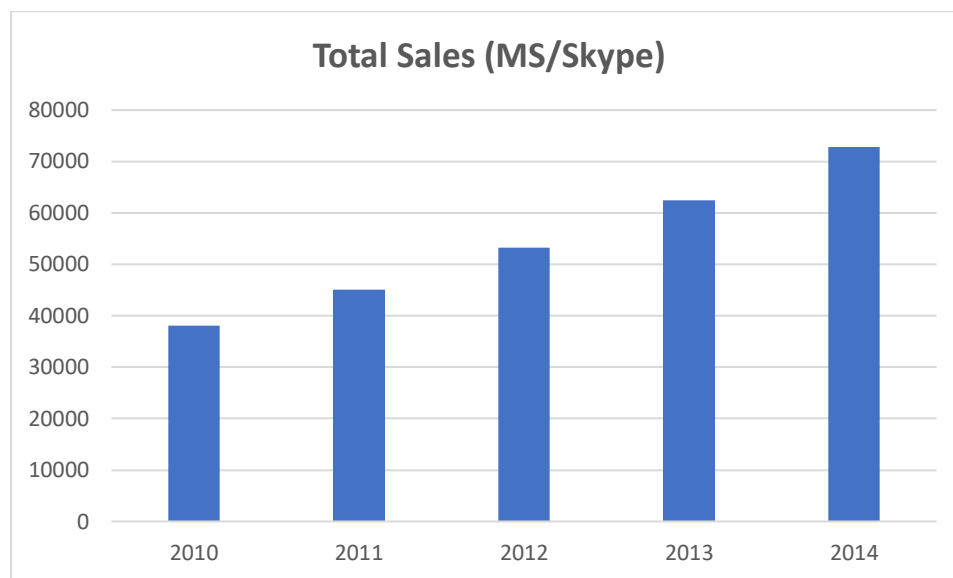
In the table, SIC 1, 2 and 3 represent Google, Yahoo and AOL, respectively. None of these competitors provide for a breakdown of segments that fully represents the product in question

(video call services). We thus rely on segment-level data. For Google, we rely on its “Google” segment, whereas for Yahoo and AOL, we focus on communications segments.<sup>102</sup>

**Table – IV: *Microsoft/Skype* Figures for the SIC Test**

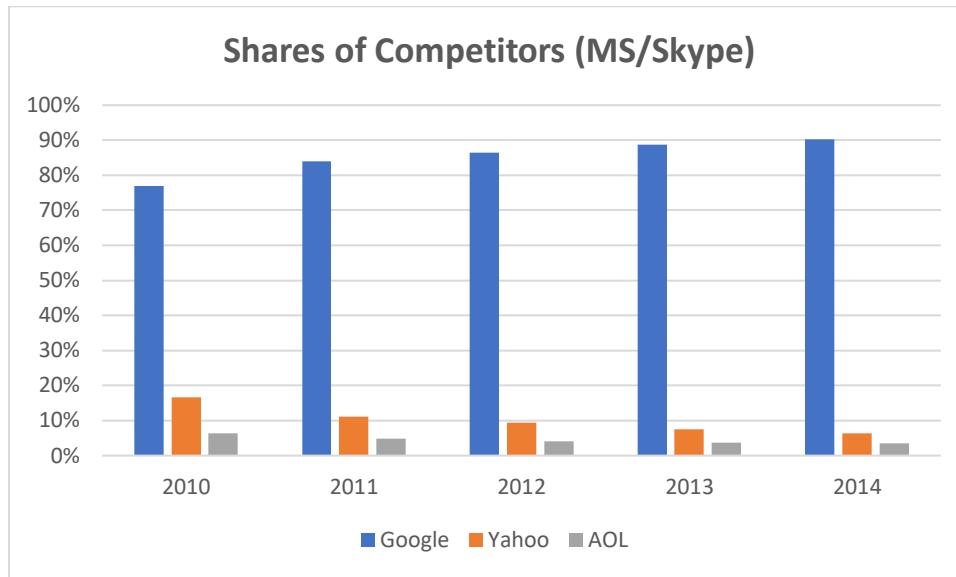
	<b>SIC 1</b>	<b>SIC 2</b>	<b>SIC 3</b>	<b>Total Sales</b>	<b>MS of SIC 1</b>	<b>MS of SIC 2</b>	<b>MS of SIC 3</b>
FY2010	29321	6324	2416	38061	77%	17%	6%
<b>FY2011*</b>	37905	4984	2202	45091	84%	11%	5%
FY2012	46039	4986	2191	53216	87%	9%	4%
FY2013	55507	4680	2319	62506	89%	7%	4%
FY2014	65674	4618	2527	72819	90%	6%	3%

**Chart – B1: *Microsoft/Skype* Evolution of Total Sales**



<sup>102</sup> We note that these segments supply imperfect data, since their broad definition introduces noise to our analysis.

**Chart – B2: Microsoft/Skype Evolution of Competitor Market Shares**



### 3. Apple/Beats

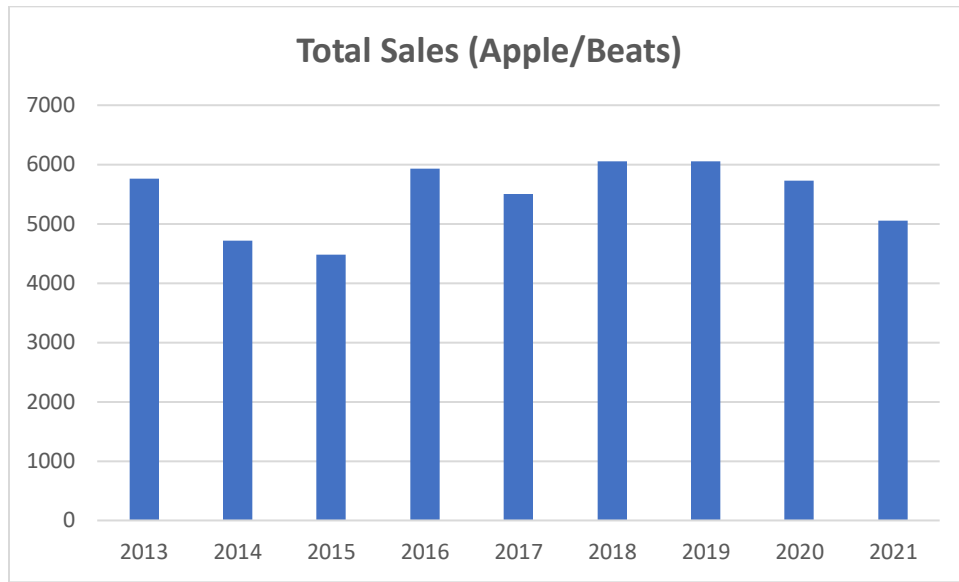
In 2014, Apple acquired Beats, a producer of headphones and audio speakers. The EC decision identified the relevant product market as headphones. In that market, the EC considered that Beats and Apple’s rivals were Sennheiser, Sony, Bose, and JVC. Only Sony and JVC are publicly traded firms. Our analysis in Table – V and Charts C1 and C2 below concerns only these competitors.

In the table, SIC 1 and 2 represent Sony and JVC, respectively. For JVC, we consider total revenues. We apply this treatment to JVC, because it is primarily a manufacturer of media devices like headphones and players. For Sony, we rely on sales value recorded under “Components” until 2017, and “Audio and Video” onwards, which include headphones.

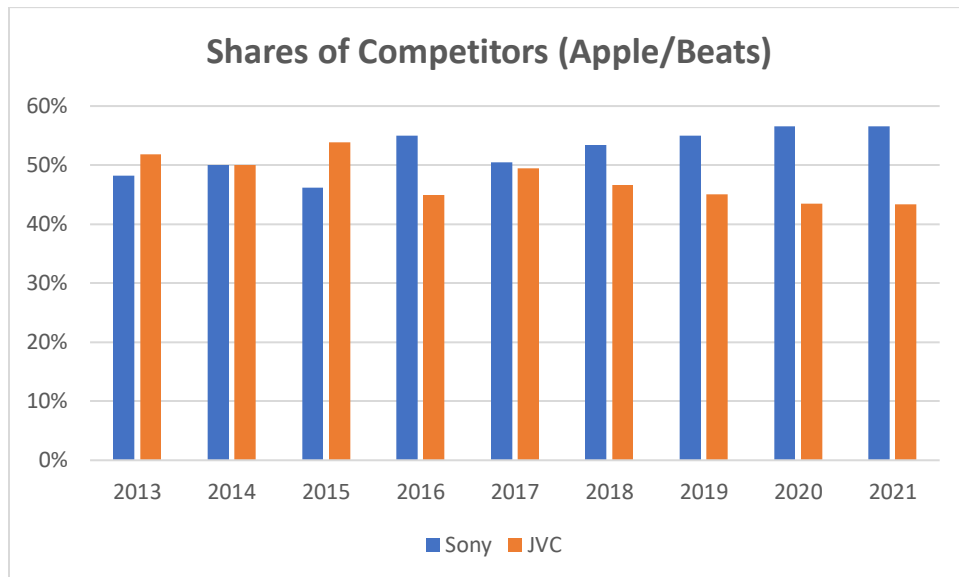
**Table – V: Apple/Beats Figures for the SIC Test**

	Sales of identified competitor				
	(SIC) 1	SIC 2	Total sales	MS of SIC 1	MS of SIC 2
FY2013	2780	2986	5766	48%	52%
<b>FY2014*</b>	2358	2355	4713	50%	50%
FY2015	2071	2412	4483	46%	54%
FY2016	3263	2668	5931	55%	45%
FY2017	2780	2723	5503	51%	49%
FY2018	3234	2822	6056	53%	47%
FY2019	3326	2729	6055	55%	45%
FY2020	3241	2491	5732	57%	43%
FY2021	2858	2191	5049	57%	43%

**Chart – C1: *Apple/Beats* Evolution of Total Sales**



**Chart – C2: *Apple/Beats* Evolution of Competitor Market Shares**



Eight years of observation allow us to notice that industry output of competitors fluctuated. Total sales immediately dropped following the merger. Sales recovered in 2016 until 2019, and dropped again in 2020-2021. The data also shows that Sony and JVC's sales fluctuated. Sony commands today an extra 9% share of sales in 2021 compared to the pre-merger situation.

#### 4. Oracle/Micros

In 2014, Oracle acquired Micros, a US-based hardware and software developer that worked extensively with retail and hospitality industries.<sup>103</sup> The EC considered the relevant market as “enterprise application software” and designated IBM, NCR, Epicor, Demandware, JDA, and Diebold Nixdorf as close rivals of the merged entity. We found sales data for IBM, NCR, and Diebold Nixdorf. Epicor, Demandware, and JDA were acquired by other firms. The analysis in Table – VI and Charts D1 and D2 gives a picture of industry sales and market structure restricted to for IBM, NCR, and Diebold Nixdorf.

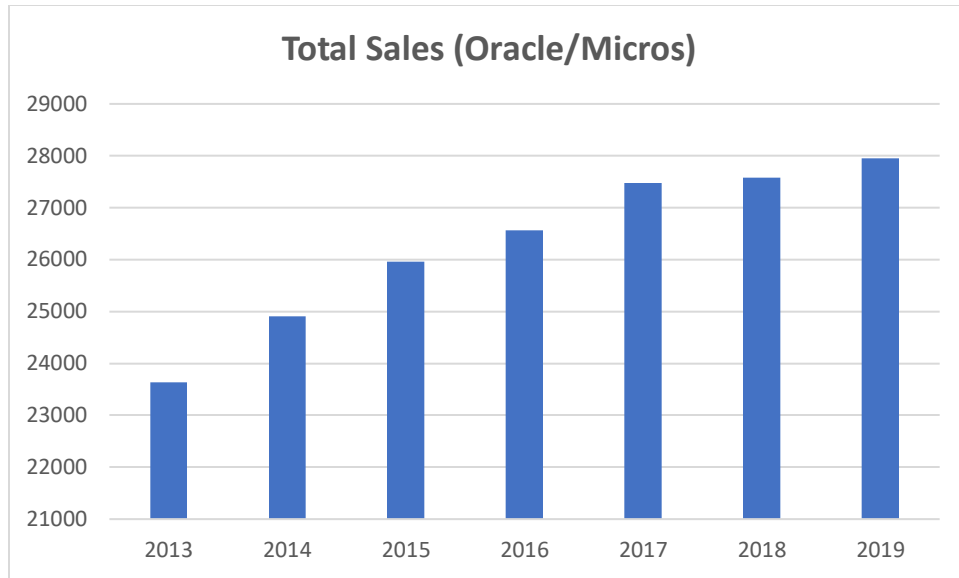
In the table, SIC 1, 2 and 3 represent IBM, NCR, and Diebold Nixdorf, respectively. For IBM, the figures are taken from the “Global Business Services” segment, which includes IBM’s enterprise application software business. Figures for Oracle are taken from its software business segment. For NCR and Diebold Nixdorf, we rely on total revenues. This is because these firms are primarily active in the provision of enterprise application software solutions.

**Table – VI: Oracle/Micros Figures for the SIC Test**

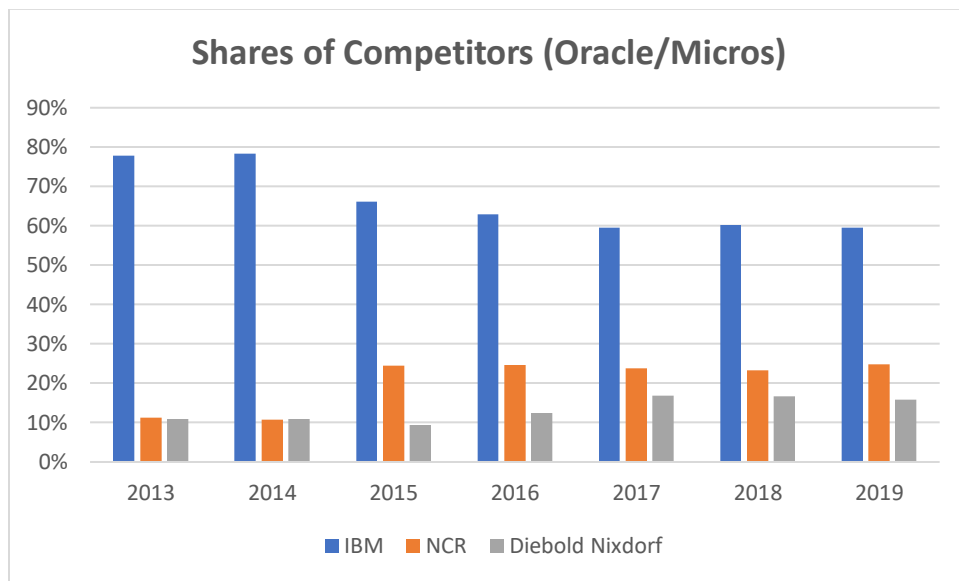
	<b>SIC 1</b>	<b>SIC 2</b>	<b>SIC 3</b>	<b>Total sales</b>	<b>MS of SIC 1</b>	<b>MS of SIC 2</b>	<b>MS of SIC 3</b>
FY2013	18396	2660	2582	23638	78%	11%	11%
<b>FY2014*</b>	19512	2667	2734	24913	78%	11%	11%
FY2015	17166	6373	2419	25958	66%	25%	9%
FY2016	16700	6543	3316	26559	63%	25%	12%
FY2017	16348	6516	4609	27473	60%	24%	17%
FY2018	16595	6405	4578	27578	60%	23%	17%
FY2019	16634	6915	4408	27957	59%	25%	16%

**Chart – D1: Oracle/Micros Evolution of Total Sales**

<sup>103</sup> Case No. M.7334 – Oracle/Micros [2014].



**Chart – D2: Oracle/Micros Evolution of Competitor Market Shares**



The data shows that the transaction coincides with an industry wide increase in output. We observe the largest jump in industry-level growth following the acquisition. While the subsequent years also saw an increase in sales, the growth rate has slowed down.

We also observe that Oracle's closest rival, IBM, lost market share. At the same time, we witness an increase in the share of sales achieved by NCR and Diebold Nixdorf, suggesting that the field is subject to some rivalry. NCR in particular more than doubled its share of sales in the market, establishing a position whereby it commands a quarter of the market. Diebold Nixdorf also managed to increase its share by half between 2013-2019, jumping from 11% to around 17%.

### 5. *Activision/King*

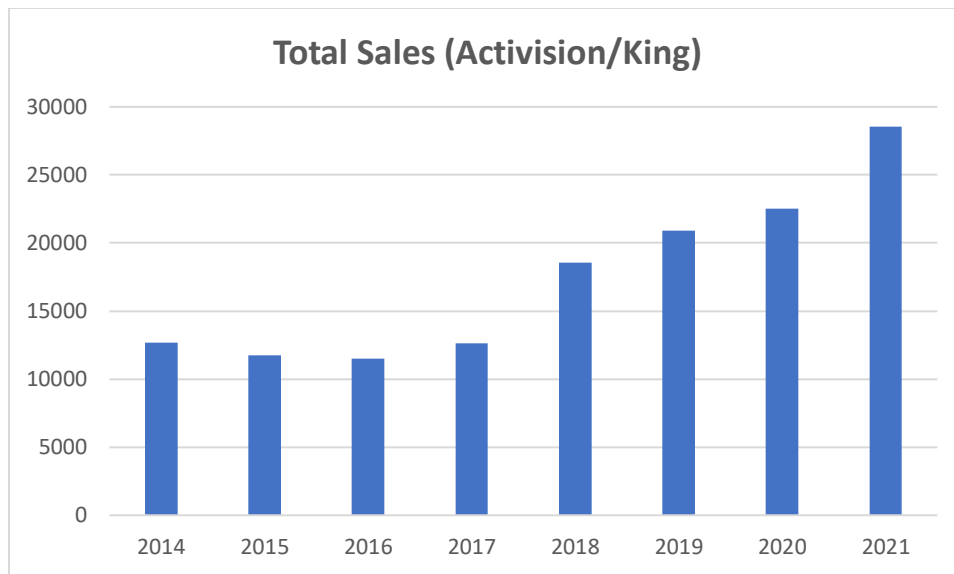
Activision Blizzard, a NASDAQ-traded company active in the development and publishing of digital entertainment content, acquired King, a mobile game developer, in 2016. In its decision, the EC considered “game publishing” as the relevant market. It designated Electronic Arts (“EA”), Nintendo, Take-Two Interactive, and Ubisoft as competitors that would maintain rivalry with the merged entity. All of these firms have been publicly traded for some time. The results in Table – VII and Charts E1 and E2 below describe the evolution of industry sales and market structure before and after the transaction.

In the table, SIC 1, 2, 3 and 4 represent EA, Ubisoft, Nintendo, and Take-Two Interactive, respectively. These firms do not display conglomerate characteristics. Instead, they are primarily concerned with the development and publishing of video games. Thus, it is appropriate to consider that segment level sales coincide with the game publishing relevant market identified by the EC.

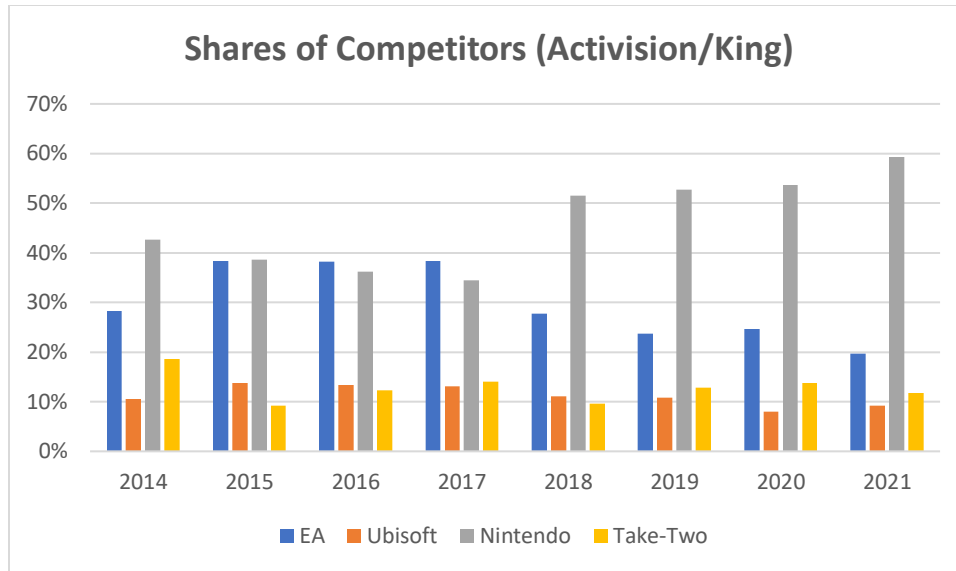
**Table – VII: Activision/King Figures for the SIC Test**

	SIC 1	SIC 2	SIC 3	SIC 4	Total sales	MS of SIC 1	MS of SIC 2	MS of SIC 3	MS of SIC 4
FY2014	3575	1337	5397	2350	12659	28%	11%	43%	19%
FY2015	4515	1624	4541	1082	11762	38%	14%	39%	9%
<b>FY2016*</b>	4396	1543	4164	1414	11517	38%	13%	36%	12%
FY2017	4845	1650	4361	1780	12636	38%	13%	35%	14%
FY2018	5150	2046	9561	1793	18550	28%	11%	52%	10%
FY2019	4950	2272	11014	2668	20904	24%	11%	53%	13%
FY2020	5537	1812	12072	3089	22510	25%	8%	54%	14%
FY2021	5629	2631	16929	3373	28562	20%	9%	59%	12%

**Chart – E1: Activision/King Evolution of Total Sales**



**Chart – E2: Activision/King Evolution of Competitor Market Shares**



The data shows an industry wide increase in output. The beginning of this trend aligns with the date of the acquisition (2016). Before 2016, industry sales were gradually decreasing. The transaction seems to have changed that course. We also observe that SICs grew, suggesting rival expansion. Each and every rival increased its sales between the period of analysis. Last, the market appears to display some rivalry. Nintendo's growth trajectory is especially noteworthy, since it expanded its share of sales by 16%, while its rivals, EA and Take-Two, experienced steady decline.

#### 6. *Microsoft/LinkedIn*

Microsoft's acquisition of LinkedIn was completed in 2016. In *Microsoft/LinkedIn*, the EC considered the relevant market to be "customer relationship management software". It identified Salesforce, Oracle, SAP, and Adobe as competitors of the merged entity. Table – VIII and Charts F1 – F2 below provide the evolution of industry sales and market structure before and after the transaction.

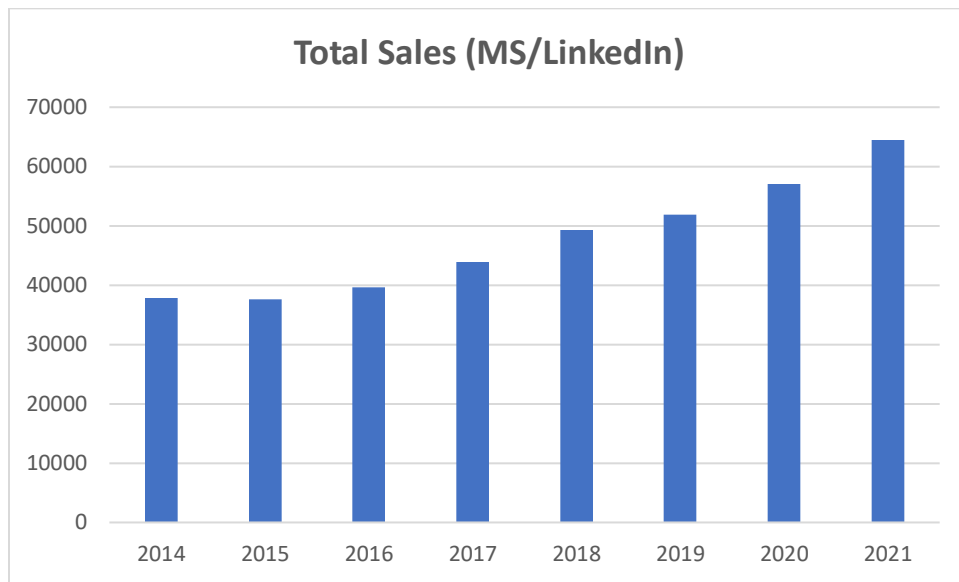
In the table, SIC 1, 2, 3 and 4 represent Salesforce, Oracle, SAP and Adobe, respectively. All three companies are active in the enterprise software solutions market, which encompasses the relevant market identified by the EC. To further refine the data, we focus on segment-level information. For Oracle, the relevant segment is "Software Licenses and Cloud Software Subscriptions". For Salesforce, we look at "Subscription, Support, and Professional Services". For Adobe, we rely on "Digital Marketing". Finally, for SAP, the relevant segment is "Applications, Technology & Services".

**Table – VIII: *Microsoft/LinkedIn* Figures for the SIC Test**

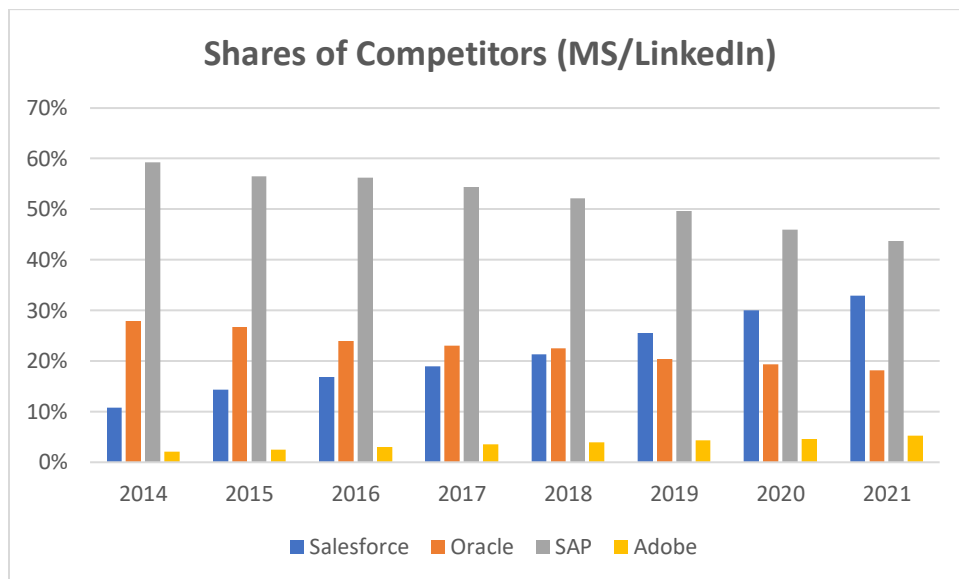
Sales of identified competitor (SIC) 1	SIC 2	SIC 3	SIC 4	Total sales	MS of SIC 1	MS of SIC 2	MS of SIC 3	MS of SIC 4
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FY2014	4071	10542	22409	798	37820	11%	28%	59%	2%
FY2015	5373	10025	21229	937	37564	14%	27%	57%	2%
<b>FY2016*</b>	6667	9498	22279	1180	39624	17%	24%	56%	3%
FY2017	8347	10098	23898	1553	43896	19%	23%	54%	4%
FY2018	10540	11113	25692	1949	49294	21%	23%	52%	4%
FY2019	13282	10572	25735	2280	51869	26%	20%	50%	4%
FY2020	17098	11019	26226	2660	57003	30%	19%	46%	5%
FY2021	21252	11713	28174	3379	64518	33%	18%	44%	5%

**Chart – F1: *Microsoft/LinkedIn* Evolution of Total Sales**



**Chart – F2: *Microsoft/LinkedIn* Evolution of Competitor Market Shares**



The data shows an increase in total output, coinciding with the year of acquisition (2016). Indeed, whilst industry sales were stagnant in 2014 and 2015, we observe a steady increase in the following years. Second, we notice substantial changes in the distribution of sales amongst competitors. Specifically, Salesforce and Adobe's share of sales grew substantially, while the share of legacy players SAP and Oracle decreased. Notably, Salesforce tripled its share. Adobe doubled its share, but it still remains a relatively small player. These are significant developments for the CRM

market, as the EC itself identified that demand in this market is sticky and customers rarely switch providers.<sup>104</sup>

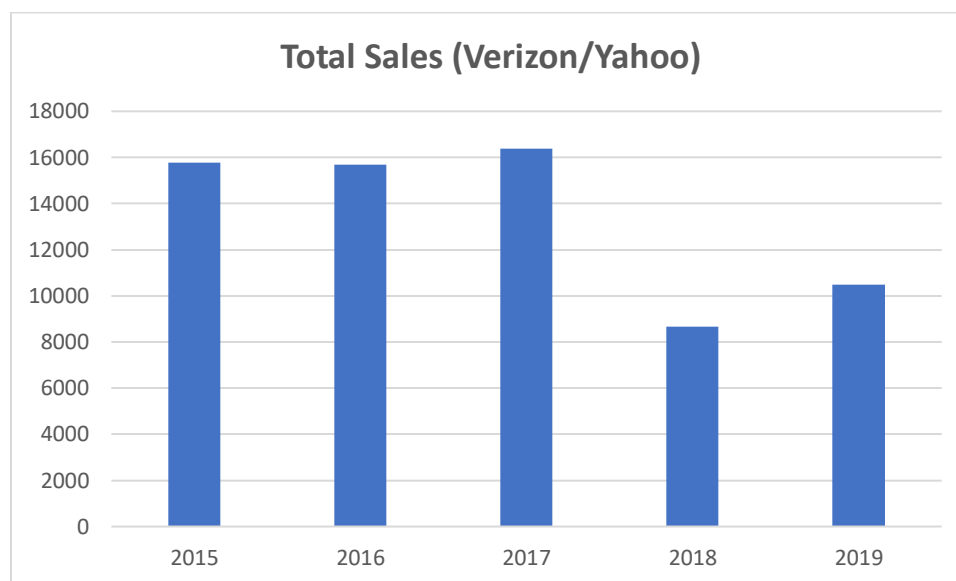
### 7. Verizon/Yahoo

Verizon acquired Yahoo in 2016.<sup>105</sup> In its decision, the EC considered the provision of “digital mobile finance content” as the relevant product market. The EC identified three competitors able to exert pressure on the merged entity: Business Insider (Axel Springer), The New York Times Corporation (“NYT”), and Thomson Reuters. Table – IX and Charts G1 – G2 below provide the evolution of industry sales and market structure before and after the transaction. In the table, SIC 1, 2 and 3 represent Axel Springer AG, the NYT and Thomson Reuters, respectively.

**Table – IX: Verizon/Yahoo Figures for the SIC Test**

	SIC 1	SIC 2	SIC 3	Total Sales	MS of SIC 1	MS of SIC 2	MS of SIC 3
FY2015	3656,3	11257	851	15764,3	23%	71%	5%
<b>FY2016*</b>	3641,3	11166	880	15687,3	23%	71%	6%
FY2017	4027,2	11333	1008	16368,2	25%	69%	6%
FY2018	2126,8	5501	1042	8669,8	25%	63%	12%
FY2019	3485,2	5906	1083	10474,2	33%	56%	10%

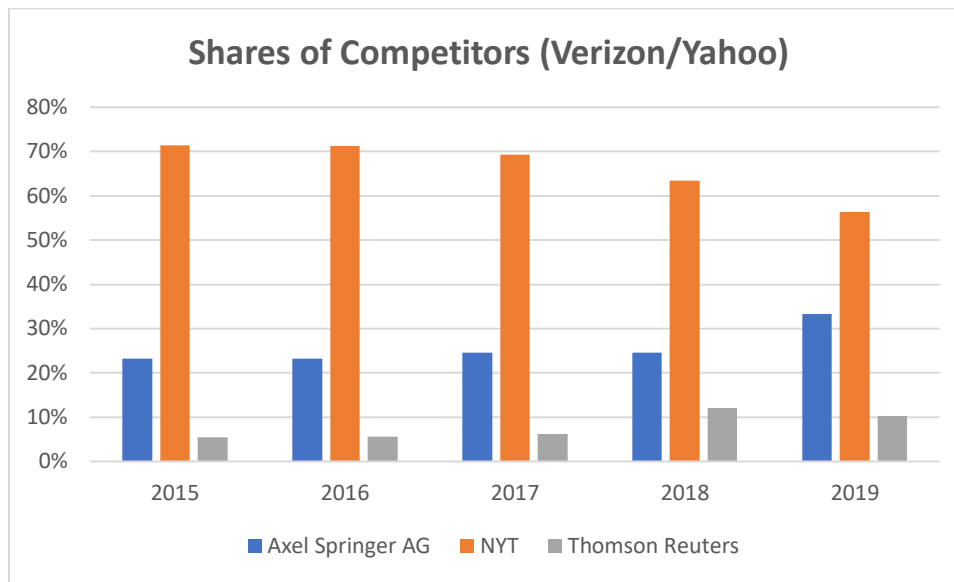
**Chart – G1: Verizon/Yahoo Evolution of Total Sales**



<sup>104</sup> See, e.g., Case M. 8124 *Microsoft/LinkedIn* [2016], para. 201; reaffirmed in Case M. 10290 *Microsoft/Nuance* [2021], para. 280.

<sup>105</sup> Case M.8180 – *Verizon/Yahoo* [2016].

**Chart – G2: Verizon/Yahoo Evolution of Competitor Market Shares**



Two observations arise from our data. First, total sales of digital mobile finance content have decreased since the merger. We see, however, a slight rise in output immediately following the merger. Second, the dominance enjoyed by the New York Times appears to have diminished post-merger. Following the transaction, the NYT consistently lost market share. By contrast, rival Axel Springer AG, a German media conglomerate, experienced a growth of its share of sales. Thomson Reuters also managed to double its share of market sales at the expense of the NYT.

#### 8. *Google/FitBit*

Google acquired FitBit, a technology company mainly concerned with the production and sales of wearable devices (e.g., fitness trackers), in 2020. In *Google/FitBit*, the EC decision considered the relevant market as “wrist-worn wearable devices”.<sup>106</sup> In that market, the EC identified competition from Apple, Xiaomi, Huawei, Garmin, and Samsung. All of these firms are publicly traded. Table – X and Charts H1 – H2 below provide an account of the structure and evolution of the industry, centred around the acquisition.

In the table, SIC 1, 2, 3, 4, and 5 represent Apple, Xiaomi, Samsung, Garmin and Huawei, respectively. For Huawei, we use revenue figures from the “Customer” business segment. For Xiaomi, we use figures from the “IoT and Lifestyle Products” segment. For Samsung, we rely on the “Information Technology & Mobile Communications” segment.<sup>107</sup> For Apple, we consider “Wearables, Home, and Accessories” segment. For Garmin, we use overall revenue.<sup>108</sup> Each of these segments correspond to reporting categories in which sales data for wearables are located.

<sup>106</sup> Case M.9660 – *Google/FitBit* [2020].

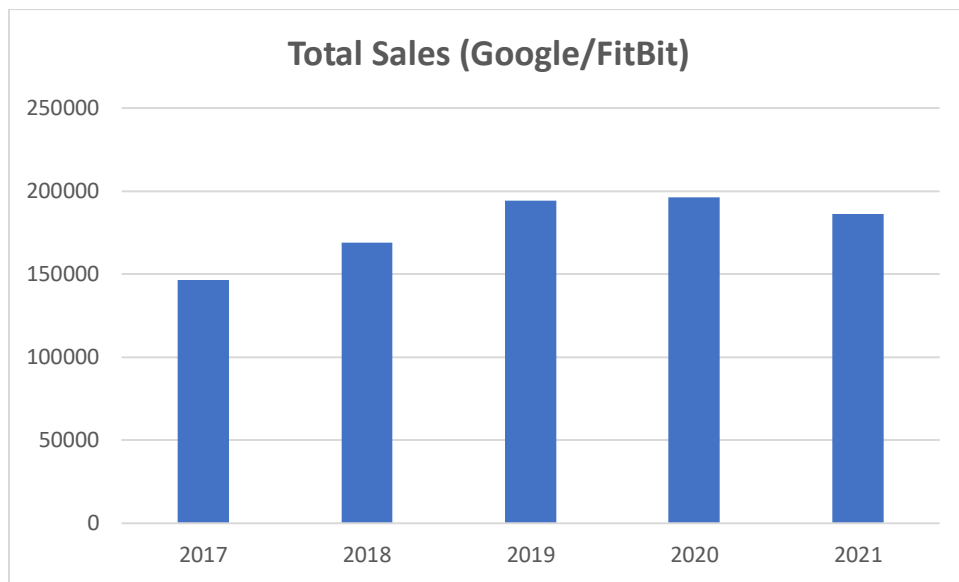
<sup>107</sup> We note that this segment also includes mobile phones, which comprise a large portion of Samsung’s sales.

<sup>108</sup> This is because Garmin’s entire product portfolio is oriented around wearable devices.

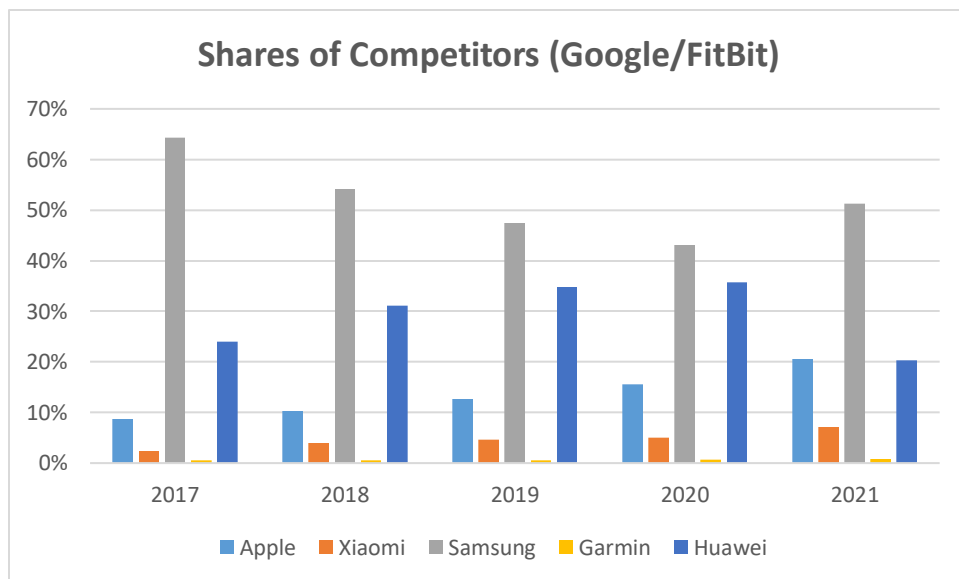
**Table – X: Google/FitBit Figures for the SIC Test**

	Sales of identified competitor (SIC)					Total sales	MS of SIC 1	MS of SIC 2	MS of SIC 3	MS of SIC 4	MS of SIC 5
	1	2	3	4	5						
FY2017	12863	3469	94372	762	35148	146614	9%	2%	64%	1%	24%
FY2018	17381	6608	91479	858	52617	168943	10%	4%	54%	1%	31%
FY2019	24482	8985	92051	1047	67627	194192	13%	5%	47%	1%	35%
<b>FY2020*</b>	30620	9769	84438	1317	69987	196131	16%	5%	43%	1%	36%
FY2021	38367	13169	95410	1533	37724	186203	21%	7%	51%	1%	20%

**Chart – H1: Google/FitBit Evolution of Total Sales**



**Chart – H2: Google/FitBit Evolution of Competitor Market Shares**



## 9. Microsoft/Zenimax

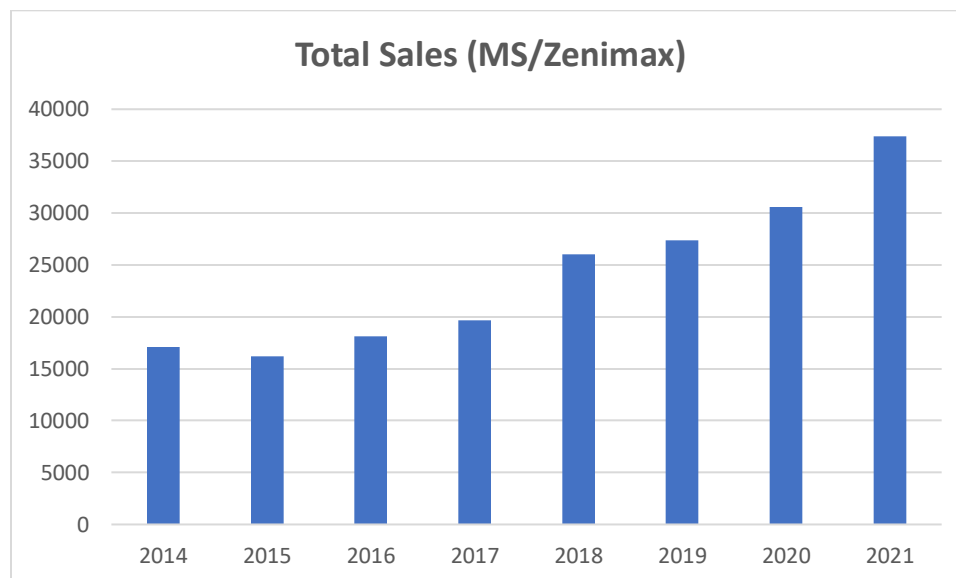
Microsoft acquired Zenimax, a game publisher famous for titles like the Elder Scrolls series, in 2021. In *Microsoft/Zenimax*, the EC considered the “digital publishing of video games” as the relevant market. In that market, the merged entity would face pressure from several competitors, including Electronic Arts, Nintendo, Activision Blizzard, Take-Two Interactive, and Ubisoft. All of these firms are publicly traded. Therefore, our analysis in Table – XI and Charts J1 and J2 below presents an overall picture of the structure and evolution of digital video game publishing industry. However, since the acquisition has only recently been closed, we are unable to provide a good picture of the post transaction world.

In the table, SIC 1, 2, 3, 4 and 5 represent EA, Nintendo, Activision Blizzard, Take-Two Interactive and Ubisoft, respectively. Since these firms’ main area of business is the publishing of video games, we consider their total revenue as the basis for our examination.

**Table – XI: Microsoft/Zenimax Figures for the SIC Test**

	Sales of identified competitor (SIC) 1	SIC 2	SIC 3	SIC 4	SIC 5	Total sales	MS of SIC 1	MS of SIC 2	MS of SIC 3	MS of SIC 4	MS of SIC 5
FY2014	3575	5397	4408	2350	1337	17067	21%	32%	26%	14%	8%
FY2015	4515	4541	4464	1082	1624	16226	28%	28%	28%	7%	10%
FY2016	4396	4164	6608	1414	1543	18125	24%	23%	36%	8%	9%
FY2017	4845	4361	7017	1780	1650	19653	25%	22%	36%	9%	8%
FY2018	5150	9561	7500	1793	2046	26050	20%	37%	29%	7%	8%
FY2019	4950	11014	6489	2668	2272	27393	18%	40%	24%	10%	8%
FY2020	5537	12072	8086	3089	1812	30596	18%	39%	26%	10%	6%
<b>FY2021*</b>	5629	16929	8803	3373	2631	37365	15%	45%	24%	9%	7%

**Chart – J1: Microsoft/Zenimax Evolution of Total Sales**





**Chart – J2: *Microsoft/Zenimax* Evolution of Competitor Market Shares**

