

October 2024

“Killer Acquisitions:
Evidence from European Merger Cases”

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INTRODUCTION

This article studies whether large technology firms acquire firms that could become their competitors 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 on firms holding market power in the *present*. The phenomenon would often involve startups or nascent innovative firms that seek an exit.

The economic literature suggests that killer acquisitions cluster in specific industries like pharmaceuticals or that their adverse effects on competition require specific conditions to hold true.¹ Nevertheless, the idea that large technology firms acquire startups to suppress competitive threats is driving rapid changes in merger policy.² Competition agencies like the Federal Trade Commission (“FTC”), the Competition and Markets Authority (“CMA”), and the European Commission (“EC”) are poised to challenge an increasing number of mergers in all technology industries by relaxing the existing conditions discussed in economic literature.³ Recently, the CMA successfully prohibited the merger between Meta and the GIF supplier GIPHY.⁴ In the US, the FTC has, albeit unsuccessfully, challenged

¹ These assumptions are listed later herein. They are discussed in Colleen Cunningham, Song Ma, & Florian Ederer, *Killer Acquisitions*, 129 J. POL. ECON. 649, 650 (2021).

² The merger guidelines, as issued by the U.S. Department of Justice and the Federal Trade Commission, also contain tightened rules on controlling the acquisition of entrants. See, Randy Picker, *Understanding Firm Entry and the Internal Growth Presumption in the Draft Merger Guidelines*, PROMARKET (Aug. 1, 2023), <https://www.promarket.org/2023/08/01/randy-picker-understanding-firm-entry-and-the-internal-growth-presumption-in-the-draft-merger-guidelines/>.

³ [Viktoria H.S.E](#) Robertson, ‘Digital merger control: adapting theories of harm’ (2024) European Competition Journal (forthcoming).

⁴ COMPETITION AND MARKETS AUTHORITY, *CMA orders Meta to sell Giphy*, (Oct. 18, 2022) <https://www.gov.uk/government/news/cma-orders-meta-to-sell-giphy>.

Facebook's acquisition of Within⁵ and both the FTC⁶ and the EC⁷ opened an in-depth investigation into Microsoft's plan to buy Activision.

The article aims to contribute to the debate on the competitive assessment of killer acquisitions by 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 competitive analysis must focus 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?⁸ Or are the (prospectively competitive) *products* of targets *scaled* (the so-called “scaling acquisitions”)?⁹ 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 substantially lessens competition and innovation, and consequently warrants prohibition.¹⁰ A policy preventing killer acquisitions is prospective. Risks of errors are inevitable.¹¹ 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 acquired, its products are integrated in the merged firm. How can we observe, from outside the firm, whether the target’s

⁵ FEDERAL TRADE COMMISSION, *FTC Seeks to Block Virtual Reality Giant Meta’s Acquisition of Popular App Creator Within*, (Jul. 27, 2022) <https://www.ftc.gov/news-events/news/press-releases/2022/07/ftc-seeks-block-virtual-reality-giant-metas-acquisition-popular-app-creator-within>. Although some of FTC’s theories on potential competition were found viable, the Commission ultimately lost the merger challenge in court.

⁶ FEDERAL TRADE COMMISSION, *FTC Seeks to Block Microsoft Corp.’s Acquisition of Activision Blizzard, Inc.*, (Dec. 8, 2022) <https://www.ftc.gov/news-events/news/press-releases/2022/12/ftc-seeks-block-microsoft-corps-acquisition-activision-blizzard-inc>. The FTC’s challenge was dismissed in court.

⁷ EUROPEAN COMMISSION, *Mergers: Commission opens in-depth investigation into the proposed acquisition of Activision Blizzard by Microsoft* (Nov. 8, 2022) https://ec.europa.eu/commission/presscorner/detail/en/ip_22_6578. The EC cleared the merger with commitments that concern the licensing of Activision games to competitors to alleviate potential problems in cloud gaming.

⁸ This is not a binary question. By abandoned, we mean generally any form of discontinuation, deferment, or redirection.

⁹ Idem - by scaled, we mean generally any form of maintenance, support, or prioritization.

¹⁰ A showing of a substantial lessening of competition is the test required under U.S. and EU merger law to challenge a merger.

¹¹ Sam Peltzman, *Productivity, Prices, and Concentration in Manufacturing: A Demsetzian Perspective*, 65 J. LAW. ECON. 121, 121 (2022).

product is scaled or shelved by the buyer? The problem is compounded when the buyer integrates the target's product with its own.

Besides, the killer acquisitions theory rests on strong assumption about competition. Even if we find in all cases that the target's products are discontinued in the buyer's firm, it does not necessarily follow that the outcome is a weakening of competition. Demand for the discontinued product may switch to alternative products, leading to the growth of third-party competitors. Equating a discontinuation of the target's product with anticompetitive effects is therefore excessive. The former does not necessarily entail the latter.

A solution to both the observability and inference problems is to focus on perceptions of the competitors of the acquired entity. We use competitors' official statements (yearly 10-K reports to the Securities and Exchange Commission ("SEC")) to address several issues at once. First, we study if, in the competitors' perception, the target is still "alive" post-acquisition. Second, we use competitors' official statements to assess the output 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. We study these statements to draw insights on the state of market dynamism post-acquisition.

With this background, we explain below that the plausibility of the killer acquisition theory requires that mergers would, at the very least, yield three post-transaction changes: (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.¹² In this article, we undertake several case studies based on EC merger cases in the information and communication technology ("ICT") industries to assess whether such changes can be observed.¹³

¹² 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. Observe that we can only draw a strong inference of a reduction of competition (that gives rise to firm liability) when the three changes can be observed. Thus, for example, discontinuing a product could, but does not necessarily, mean impairing competition. Only if product discontinuation is followed by a reduction or stagnation in industry-wide sales can we reasonably expect harm to competition from a product discontinuation.

¹³ 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").

Our work aims to contribute to the emerging literature on killer acquisitions by providing a retrospective case studies analysis of technology mergers in the EU. We examine whether the claim that technology companies acquire rivals with the goal of terminating their operations held in the EC cases publicly available to date. We aim to enrich the available evidence and contribute to the debate with reasoned analysis. Although our sample of cases is small, the evidence that we garner is of sufficient quality to contribute to the debate of a reform merger policy.

The article is organized as follows. Part I reviews the literature. In Part II, we introduce our methodology, and in Part III we describe the results of our case studies. Part IV formulates directions for future research.

I. LITERATURE REVIEW

In a recent academic study, Cunningham, Ma, and Ederer called attention to the issue of “killer acquisitions”. These acquisitions refer to transactions that are specifically designed to terminate the development of an innovative product by the target company to preempt future competition. The authors warn that killer acquisitions threaten competition by limiting future product rivalry.¹⁴ Since Cunningham et al., the issue has attracted enormous research interest. In this Part, we describe the growing body of literature on killer acquisitions.

The killer acquisition literature focuses on 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.¹⁵ Fumagalli, Motta, and Tarantino develop more nuanced conclusions on startup acquisitions. On the one hand, startup acquisitions can be considered as “killer” and hence anticompetitive if the target would be capable of pursuing innovative efforts without the merger. On the other hand, startup acquisitions are procompetitive if they alleviate financial, technical, and managerial constraints faced by the target firm.¹⁶ In a more recent paper, Affeldt and Kesler suggest other adverse effects from suspected killer acquisitions, such as a reduction of innovative efforts by

¹⁴ Cunningham, Ma, & Ederer, *supra* note 1, at 652.

¹⁵ Massimo Motta & Martin Peitz, *Big Tech Mergers* 54 INF. ECON. POLICY 100868, 100889 (2021). On the relationship between killer acquisitions and data, see also Anca D. Chirita, Exclusionary and Exploitative Abuses of Consumer Data, *IN RESEARCH HANDBOOK ON COMPETITION LAW AND DATA PRIVACY* (Maria Ioannidou & Despoina Mantzari eds., 2024).

¹⁶ Chiara Fumagalli, Massimo Motta, & Emanuele Tarantino, *Shelving or Developing? The Acquisition of Potential Competitors Under Financial Constraints*, CEPR DISCUSSION PAPER No. DP15113 (2020).

other firms.¹⁷ 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.”¹⁸ In a new paper, Crandall and Hazlett suggest that most acquisitions by large technology firms have been benign or procompetitive.¹⁹ Other works draw a link between the existence of a “killer acquisition, and the high nominal amounts paid by the buyer to acquire the target.”²⁰ For example, some countries have considered looking at transaction values to establish jurisdiction over a merger.²¹

The literature on killer acquisitions often takes an industry-specific perspective.²² For example, the seminal Cunningham, Ma, and Ederer article focuses on killer acquisitions in the pharmaceutical sector. Sokol develops an analysis of nascent competitor acquisitions in the biotech sector.²³ Gautier and Lamesch focus on studying the M&A activities of large digital firms.²⁴

The industry-specific development of the concept of killer acquisitions led some scholars to lament that the application of antitrust is becoming discriminatory.²⁵ But innovative and competitive dynamics are different across industries.²⁶ For example, pharmaceutical markets may be less nimble relative to digital markets. Patent density is higher in pharmaceuticals, drug development is slow, innovation is cumulative, and generic entry is a real

¹⁷ Pauline Affeldt & Reinhold Kesler, *Competitors’ Reactions to Big Tech Acquisitions: Evidence from Mobile Apps*, (2022) DIW BERLIN DISCUSSION PAPER No. 1987 (2022). See also, Pauline Affeldt & Reinhold Kesler, *Big Tech Acquisitions – Towards Empirical Evidence*, 12 J. EUR. COMPET. LAW & PRA. 471, 476-477 (2021).

¹⁸ Zelda Brutti & Luis E. Rojas, *M&A and Early Investment Decisions by Digital Platforms*, 49 J. IND. BUS. ECON. 509, 510 (2022).

¹⁹ Robert W. Crandall & Thomas W. Hazlett, *Antitrust in the Information Economy: Digital Platform Mergers*, (2022) 65 J. LAW & ECON. 499, 499-451 (2022).

²⁰ See Camila Cabral Pires-Alves, Manuel Gonzalo, & Marcos Lyra, *Startups and Young Innovative Firms Mergers & Acquisitions: An Antitrust Debate?*, 23 REV. ECON. CONTEMP. 1, 1-3 (2019); Mats Holmström, Jorge Padilla, Robin Stitzing, & Pekka Saaskilahti, *Killer Acquisitions? The Debate on Merger Control for Digital Markets*, 1 YEARBOOK OF THE FINNISH COMPETITION LAW ASSOCIATION 35, 35-40 (2018).

²¹ See Natalie Harsdorf, *Digital Economy: New Test in Austrian Merger Control*, 8 J. EUR. COMPET. LAW & PRA. 421 (2017).

²² See Amy Madl, *Killing Innovation? Antitrust Implications of Killer Acquisitions*, 38 YALE J. REG. BULL. 28 (2021).

²³ Daniel Sokol, *Merger Law for Biotech and Killer Acquisitions*, 72 FLA. L. REV. FOR. 1 (2021).

²⁴ Axel Gautier & Joe Lamesch, *Mergers in the Digital Economy*, 54 INF. ECON. POL. 1, 1-2 (2021).

²⁵ John M. Yun, *Discriminatory Antitrust in the Realm of Potential and Nascent Competition*, 1 COMP. POL. INT. ANT. CHRON. 41, 46 (2022).

²⁶ Mark A. Lemley, *Industry-Specific Antitrust Policy for Innovation*, 3 COL. BUS. L. REV. 637 (2011).

threat.²⁷ These dynamics may lead pharmaceutical firms to engage in acquisitions to block innovation competition. Such dynamics could yield product overlaps and discontinuation of research and development (“R&D”) efforts.²⁸ By contrast, innovation in digital markets relies on product differentiation, design around, complementarity, and ecosystem building.²⁹ For example, the gaming industry uses network-based innovation ecosystems and content co-creation processes.³⁰ Acquisitions could have a lower impact on innovation competition in these industries compared to pharmaceuticals.

Empirical work suggests that killer acquisitions remain a relatively limited phenomenon.³¹ In pharmaceuticals for instance, 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 acquisition.³² 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.³³ Others argue that acquisitions may be motivated by an aim to diversify product portfolios³⁴ or combine R&D activities.³⁵ Some commentators consider that adverse effects on competition arise from some venture

²⁷ Arti K. Rai, *Fostering Cumulative Innovation in the Biopharmaceutical Industry: The Role of Patents and Antitrust*, 16 BERKELEY TECH. L. J. 813 (2001).

²⁸ Jonathan Barnett, *‘Killer Acquisitions’ Reexamined: Economic Hyperbole in the Age of Populist Antitrust*, 3 U. CHI. BUS. L. REV. 39 (2024).

²⁹ Kumar R. Sarangee & Raj Echambadi, *Firm-Specific Determinants of Product Line Technology Strategies in High Technology Markets*, 8 STRATEG. ENTREP. J. 149 (2014).

³⁰ Patrycja Klimas & Wojciech Czakon, *Gaming innovation ecosystem: actors, roles and co-innovation processes*, 16 REV. MANAG. SCI. 2213 (2022); Filipe Castro Soeiro, Mariana Santos, & Jose Alves, *Network-based innovation: the case for mobile gaming and digital music*, 28 EUR. BUS. REV. 155 (2016).

³¹ See Steven Sunshine & Julia K. York, *DoJ’s Failure to Prove its “Killer Acquisition” Claim in Sabre/Farelogix and Parallels to Other Recent Government Merger Litigation Losses*, 72 FLA. L. REV. FOR. 22 (2021); Frederic Marty & Thierry Warin, *Visa Acquiring Plaid: A Tartan Over a Killer Acquisition?*, CIRANO WORKING PAPERS No. 62 (2020); Jonathan Barnett, *‘Killer Acquisitions’ Reexamined: Economic Hyperbole in the Age of Populist Antitrust*, 3 U. CHI. BUS. L. REV. 39 (2024).

³² Interestingly, the authors’ finding of the rarity of killer acquisitions disappear in the final (published) version of their paper, which omits their previous characterization of what constitutes a killer acquisition.

³³ Luis Cabral, *Merger Policy in Digital Industries*, 54 INF. ECON. POL. 100866 (2021).

³⁴ Geoffrey Manne, Sam Bowman, & Dirk Auer, *Technology Mergers and the Market for Corporate Control*, 86 MO. L. REV. 1047 (2022).

³⁵ 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).

capitalists and startup founders whose objectives are mainly driven by “exit strategies” which sometimes consist in being acquired by a dominant competitor.³⁶

The infrequency of the phenomenon does not imply a permissive merger policy. Merger control systems are for the marginal case. Seen through that light, the rates of 5 to 7 percent in Cunningham, Ma, and Ederer is equivalent to the average prohibition rate in merger cases in Europe.³⁷ Hence, killer acquisition scenarios deserve scrutiny from merger policy. In line with this, some jurisdictions like Austria and Germany already broadened the scope of their merger control system by adopting a “transaction value” threshold.³⁸ The OECD has advocated for a reversal of the burden of proof for certain mergers.³⁹ Other proposed legal changes range from substantive adjustments designed to make merger guidelines more aggressive towards digital platforms,⁴⁰ to jurisdictional modifications seeking to lower merger control thresholds in line with the theory’s contention that killer acquisitions “disproportionately” occur below the radar of merger review.⁴¹ At the same time, it is questionable whether the test used to determine a merger prohibition needs change.⁴² Some works indicate that using an empirically understudied theory of killer acquisitions to develop more restrictive merger

³⁶ Mark A. Lemley & Andrew McCreary, *Exit Strategy*, 101 B. U. L. REV. 1, 1-2 (2021).

³⁷ 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*, SPECIAL REPORT NO. 24 (Nov. 19, 2020) https://www.eca.europa.eu/Lists/ECADocuments/SR20_24/SR_Competition_policy_EN.pdf.

³⁸ Kevin A. Bryan & Erik Hovenkamp, *Startup Acquisitions, Error Costs, and Antitrust Policy*, 87 U. CHI. L. REV. 331 (2020).

³⁹ *Start-ups, Killer Acquisitions, and Merger Control*, ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT BACKGROUND NOTE NO. DAF/COMP2020/5 (May 12, 2020) [https://one.oecd.org/document/DAF/COMP\(2020\)5/en/pdf](https://one.oecd.org/document/DAF/COMP(2020)5/en/pdf).

⁴⁰ *Stigler Committee on Digital Platforms*, STIGLER CENTER FOR THE STUDY OF THE ECONOMY AND THE STATE FINAL REPORT (Sep. 16, 2019) <https://www.sipotra.it/wp-content/uploads/2020/02/Stigler-Committee-on-Digital-Platforms-Final-Report.pdf>.

⁴¹ Cunningham, Ma, & Ederer, *supra* note 1, at 685.

⁴² Claire Turgot, *Killer Acquisitions in Digital Markets: Evaluating the Effectiveness of the EU Merger Control Regime*, 2 EUR. COMPET. REG. L. REV. 112 (2021).

policy risks impeding incentives to innovate.⁴³ These studies insist on a case by case assessment of startup acquisitions by established firms.⁴⁴

The interest surrounding the literature on “killer acquisitions” has sprouted new theories regarding the motivations behind mergers and their effects on competitive performance. Distinct from but related to killer acquisitions, some mergers would involve “acquisitions for sleep”. In such cases, the target firm’s patents or valuable assets are “put to sleep” following the transaction.⁴⁵ Other works emphasize the phenomenon of “kill zones”, where large technology firms pursue series of acquisitions in a specific business segment.⁴⁶ Accordingly, the fear of being acquired potentially could weaken the competitive motivations of startups operating within or near these “kill zones”. Instead of pursuing innovative solutions that will compete with established products, startups within or near a kill zone will focus on developing innovations that complement incumbent firms’ products. A concept of “reverse killer acquisitions” has also been discussed. In this variant of the theory, the acquiring firm shuns the development of in-house products, and concentrates on developing the product acquired via the merger.⁴⁷ The competitive concern is that these acquisitions eliminate “organic entry” by the incumbent that would have occurred in the counterfactual scenario.⁴⁸

Last, some works cast doubt on the alleged adverse impacts of killer acquisitions altogether.⁴⁹ Large technology firms’ acquisitions of startups

⁴³ Igor Letina, Armin Schmutzler, & Regina Seibel, *Killer Acquisitions and Beyond: Policy Effects on Innovation Strategies*, CEPR DISCUSSION PAPER NO. DP15167 (2020).

⁴⁴ Luise Eisfeld, *Entry and Acquisitions in Software Markets*, (Feb. 15, 2024) https://luiseeisfeld.github.io/assets/docs/JMP_Eisfeld_TSE.pdf. See also John M. Yun, *Potential Competition, Nascent Competitors, and Killer Acquisitions*, in THE GLOBAL ANTITRUST INSTITUTE REPORT ON THE DIGITAL ECONOMY 652 (Joshua D. Wright & Douglas H. Ginsburg eds., 2020).

⁴⁵ Pehr-Johan Norback, Charlotta Olofsson, & Lars Persson, *Acquisitions for Sleep*, CESIFO WORKING PAPER NO. 8095 (2020).

⁴⁶ Sai Krishna Kamepalli, Raghuram Rajan, & Luigi Zingales, *Kill Zone*, NBER WORKING PAPER NO. 27146 (2020).

⁴⁷ Cristina Caffarra, Gregory Crawford, & Tommaso Valletti, *How Tech Rolls: Potential Competition and Reverse Killer Acquisitions*, COMPETITION POLICY INTERNATIONAL (May 26, 2020) <https://www.competitionpolicyinternational.com/how-tech-rolls-potential-competition-and-reverse-killer-acquisitions/>.

⁴⁸ Oliver Latham, Isabel Tecu, & Nitika Bagaria, *Beyond Killer Acquisitions*, COMPETITION POLICY INTERNATIONAL (May 26, 2020) <https://www.competitionpolicyinternational.com/beyond-killer-acquisitions-are-there-more-common-potential-competition-issues-in-tech-deals-and-how-can-these-be-assessed/>.

⁴⁹ Kristen Limarzi & Harry S. Phillips, “Killer Acquisitions,” Big Tech, and Section 2: A Solution in Search of a Problem, COMPETITION POLICY INTERNATIONAL, (May 26, 2022) <https://www.competitionpolicyinternational.com/killer-acquisitions-big-tech-and-section-2-a-solution-in-search-of-a-problem/>.

generally promote competition and innovation. For example, a recent empirical study notes that mergers in high technology markets increase R&D expenditure by as much as USD 13.5 billion annually.⁵⁰

II. METHODOLOGY

This article 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.

A. CASE SELECTION

We start by compiling a complete list of all business transactions within ICT sector using the EC's official register of merger transactions since its creation (September 1990). 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 387 cases.

Because the theory of killer acquisitions focuses on large technology firms as acquirers, we restrict the search to transactions involving Google, Amazon, Facebook, Apple, and Microsoft. Admittedly, this restriction leads to a dramatic reduction in the number of cases analyzed. We cannot definitively say that acquisitions by other types of firm do not raise suspicions as killer acquisitions. However, this restriction is justified considering that the killer acquisitions theory has mostly been developed as an issue specific to large technology firms. Focusing on large technology firms is a way to control for many common characteristics not shared by other types of firms. Moreover, all five firms have been deemed to enjoy dominant or gatekeeping positions, rendering them prime suspects for preempting future competition through acquisitions. The 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.⁵¹ 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.⁵² This yields

⁵⁰ Robert Kulick & Andrew Card, *Mergers, Industries, and Innovation: Evidence from R&D Expenditure and Patent Applications*, NERA ECONOMIC CONSULTING, (Feb. 2023) <https://www.uschamber.com/assets/documents/NERA-Mergers-and-Innovation-Feb-2023.pdf>.

⁵¹ These cases are Microsoft/Time Warner/ContentGuard (M.3445), General Electric/Microsoft (M.6474), and Alphabet/RESMED (M.8991).

⁵² These cases are Meta/Kustomer (M.10262), Amazon/MGM (M.10349), and Microsoft/Nuance (M.10290).

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. This ensures the availability of sales data, as most companies do not have data pertaining to the 2000s. For example, in 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 for this case generates one transaction, that is Activision/King. We apply the same manipulation to all other cases and rivals.⁵³ 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.⁵⁴

The sample appears to be reasonable to examine the plausibility of the killer acquisition theory. 5 out of 12 transactions involved turnovers below the threshold for EC merger review.⁵⁵ This fits roughly with the focus of the killer acquisition argument, which stresses that problematic mergers “*disproportionately occur just below thresholds for antitrust scrutiny.*”⁵⁶ That said, our sample also allows us to review deals that were reviewed and – wrongly perhaps – cleared.

A small number of cases does not appear problematic to study killer acquisitions, conditional on focusing on relevant case studies. A growing body of economic literature on the ex post evaluation of mergers follows a

53 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.

⁵⁴ Case M.10643 Oracle/CERNER [2022].

⁵⁵ These are Apple/Beats, Microsoft/Zenimax, Microsoft/GitHub, Apple/Shazam, and Facebook/WhatsApp.

⁵⁶ Cunningham, Ma, & Ederer, *supra* note 1, at 685.

similar methodology. The empirical strategy of case studies consists in relying on restricted samples and subjecting them to intensive analytical tests.

Moreover, our work has no interest in assessing how much overall M&A activity large firms engage in. Instead, what we ask ourselves is this: in a subset of acquisition cases that we know, that we can observe, and on which we can collect various types of evidence, was ‘competition killing’ involved?⁵⁷ We do not seek to build statistics of the number of startup acquisitions made by large technology firms. An abundant body of literature investigates how many acquisitions occurred.⁵⁸ These works raise genuine concern of inflated transaction numbers as datasets tend to apprehend simple share transfers.

B. 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.⁵⁹ 31 of such rivals are public firms 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. We can use such disclosure information as a proxy for 10-Ks or 20-F.

⁵⁷ Applying the same case selection methodology to U.S. cases yields only one additional case (Google/ITA Software). This case concerned the comparative flight search websites market, and was resolved via settlement. Interestingly, the terms of settlement included a mandate on Google to continue the R&D effort for the target product (“QPX” – a flight search engine). Google also had to bring to market the next-generation flight search engine product planned by ITA (“InstaSearch”). Whilst this may be interpreted as a precaution against potential acts of killing, the existence of such remedies also somewhat repudiates the need for a separate killer acquisition theory of harm, as the agencies already seem to possess adequate tools to detect, monitor, and remedy problematic acquisitions.

⁵⁸ For example, compare the conclusions of Bauer and Prado with the results obtained by Gugler, Szücs, and Wohak. Whilst both papers study a large sample of transactions, the former reports pro-competitive findings, whilst the latter argues that some acquisitions may be anticompetitive. See, Tiago S. Prado & Johannes Bauer, *Big Tech platform acquisitions of start-ups and venture capital funding for innovation*, 59 INF. ECON. POL. 100973 (2022); Klaus Gugler, Florian Szücs, & Ulrich Wohak, *Start-up Acquisitions, Venture Capital, and Innovation*, WU VIENNA DEPARTMENT OF ECONOMICS WORKING PAPER No. 340 (2023).

⁵⁹ 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.

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. Later we discuss some limits of this test.

Third, we can search the disclosure data for industry events that correlate with rising competition. We focus on three *post-merger competitive events*, namely: new product introduction, new firm creation, or competitors going public. We focus on either expansion of an existing competitor or entry of a new firm in the product market affected by the merger.

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 plausibility of the killer acquisition theory.

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 error 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 theory.

III. RESULTS

A. 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 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.⁶⁰ Reporting firms seldom 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 shed light on how participants perceive the evolution of competition in their industry.⁶¹

We implement the post-merger rival perception test 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). Table – I below displays the results of this exercise.

TABLE – I: POST-MERGER RIVAL PERCEPTION ANALYSIS

Only Target	Only Acquirer	Both	Non-responder	Others
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⁶⁰ Perception of competitive threat has entered the EU antitrust lexicon as a relevant parameter in assessing cases. See Case C-307/18 *Generics UK* [2020], para. 135.

⁶¹ 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. For further discussion, see NICOLAS PETIT, *BIG TECH AND THE DIGITAL ECONOMY: THE MOLIGOPOLY SCENARIO* (2020).

2	2	3	2	3
SAP/Sybase Verizon/Yahoo	Microsoft/Skype Microsoft/LinkedIn	Google/FitBit Activision/King Oracle/Micros	Apple/Beats Apple/Shazam	Microsoft/ZeniMax Microsoft/GitHub Facebook/WhatsApp

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 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. In all cases, these competitor perceptions conformed with desk research. The remaining three cases are somewhat ambivalent regarding the change in the rivals' perception of rivalry. We discuss this phenomenon further below.

1. *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, Oracle, one of the chief rivals of SAP in the market for enterprise application software, identified Sybase as a competitor as early as 2009.⁶² 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 acknowledges Sybase as a competitor. In its 10-Ks issued at the end of fiscal years 2010 and 2011, Microsoft mentions Sybase as a competitor in offering business intelligence and database services.⁶³ Note that Microsoft did not perceive Sybase as the victim of a “kill” by SAP. A similar observation applies to Verizon/Yahoo. In that case, The New York Times (“NYT”) referred to Yahoo News as a source of competition before, during, and after Yahoo’s acquisition by Verizon.

2. *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 customer relationship management (“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

⁶² Oracle 10-K Report, 2009, page 11.

⁶³ Microsoft 10-K Reports, 2010 and 2011, pages 6.

channels such as the use of standalone mobile applications (like Skype) “*embedded*” in operating systems.⁶⁴ 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. None of these firms recognized LinkedIn as a competitive threat. However, they recognized Microsoft as a competitive threat. In the case of Oracle and Adobe, the threat of Microsoft is present throughout the three years. By contrast, SAP only starts acknowledging Microsoft as a rival after the transaction, in its 20-F report issued for fiscal year 2017.

3. *Both the Target and the Acquirer*

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

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 point out to Activision Blizzard as a powerful competitor. After the acquisition, rival perception appears to change slightly. Ubisoft refers to “Activision Blizzard King” as a source of competitive pressure in its 2017 annual report.⁶⁸

⁶⁴ 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.

⁶⁵ Garmin 10-K Reports, 2019 and 2020, pages 13 and 10, respectively.

⁶⁶ Garmin 10-K Report, 2021, page 10.

⁶⁷ 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.

⁶⁸ Ubisoft Annual Report, 2017, page 22. 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, NCR indirectly referred to the acquisition by referring to Micros with Oracle in brackets.⁶⁹ This is like Garmin’s recognition of FitBit as continuing operations under the control of Google. One way to interpret this reference is 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.

4. *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.⁷⁰ In Apple/Shazam (2018), the EC identified Musixmatch, SoundHound, and Deezer as rivals in music 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.⁷¹

5. *Others*

Three transactions displayed peculiarities which caution against using them for our test. Facebook/WhatsApp (2014) would have been 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

⁶⁹ NCR 10-K Report, 2016, page 14.

⁷⁰ 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.

⁷¹ 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, 74 (2022) <https://www.deezer-investors.com/wp-content/uploads/2022/06/Merger-prospectus-31.05.22.pdf>.

(Snapchat, Telegram, and Signal).⁷² Snapchat issued its first annual report as late as 2018, and consistently identified both Facebook and WhatsApp as competitors since then.

Microsoft/GitHub (2018) would have also been classified under the “Both the Target and the Acquirer” tab.⁷³ Both identified competitors Atlassian and GitLab recognized Microsoft and GitHub as strong competitors in source code hosting services for control.⁷⁴ 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.⁷⁵ 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

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

⁷³ Even though source code hosting services for control was offered as a 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.

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

⁷⁵ 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.⁷⁵

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 case studies.

B. POST-MERGER RIVAL SALES

1. *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 estimate 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 pre-emption of future competition, we could observe a decrease in industry output following a suspicious transaction, i.e., a transaction that would increase market power. 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 inaccurate. We thus discard it. Second, we can use sales at the product level 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.⁷⁶ 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 remove all noise, as sales of related products are often lumped together in most segments.⁷⁷

⁷⁶ 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”.

⁷⁷ 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.

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.⁷⁸ We examine sales growth and sales distribution amongst rivals. We believe analyzing segment-level data yields three interesting information signals. First, 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 lean towards the idea that 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.⁷⁹ Third, the evolution of segment-level sales amongst SICs indicate whether there is intensified rivalry in response to the merger. To be more precise, if segment-level sales amongst rivals to the merged entity fluctuate, it is possible that the reallocation of sales is the result of a 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.⁸⁰

2. *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 see 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 output produced by the firms in our sample: Apple/Beats, Verizon/Yahoo, and Google/FitBit. We can discard Google/FitBit. The main driver of output reduction in that case is Huawei, the sales of which nearly halved after the merger. We can conjecture that this is

⁷⁸ The sales data and YoY growth are available under the Appendix.

⁷⁹ If there was a killing of competition understood as substitutes, harm to complements using the substitute would also obtain.

⁸⁰ 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 from which to derive observations. 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).

due to the ban of the company in the US.⁸¹ Disregarding Huawei, we observe that the evolution of rivals' shares is not even in Google/FitBit. While Xiaomi and, more to a larger extent, Apple experienced growth, others like Samsung and Garmin have seen their shares fluctuate, with Garmin stagnating and Samsung receding. This could be a sign of effective competition.

In Verizon/Yahoo, the primary firms that contribute to reduced output were NYT and Axel Springer AG.⁸² By contrast, Thomson Reuters increased its revenues in digital finance content. It is unclear whether Verizon's acquisition of Yahoo played a role in this slump. The industry went through other events that might have had an impact on decreased revenues. For instance, it is widely reported that the NYT introduced a stricter paywall in 2017 for its digital content.⁸³

Apple/Beats supplies interesting insights. At first glance, the case fails both of our tests. Total output in the market in 2021 is at a lower level than in 2013. Furthermore, it appears that sales have dropped following the merger. However, sales had been dropping in the years preceding the merger too. The further decrease that we observe may thus be an exacerbation of this overall trend. We also note that, under the rival perception test, neither Sony nor JVC acknowledged Apple or Beats as a rival. These findings do not support considering the transaction as anticompetitive. But let us note that the case, as it stands, is the one raising the most suspicion in our dataset.⁸⁴

In the remaining six cases, we observe an increase in industry output. In some of them, 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 output. By contrast, Oracle registered lower output 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 that we reviewed, IBM consistently lost output while

⁸¹ In this case, the drop in industry sales cannot be attributed solely to an acquisition made by a competitor. See Agence France-Presse, *Sanction-hit Huawei says revenues down 29% this year*, THE GUARDIAN, Dec. 31, 2021.

⁸² For clarity, the relevant market was defined as “the provision of digital finance content”. The case is discussed in more detail under Annex.

⁸³ Sara Guaglione, *'New York Times' Tightens Metered Paywall*, MEDIAPOST (Dec. 1, 2017) <https://www.mediapost.com/publications/article/310971/new-york-times-tightens-metered-paywall.html> accessed 23 December 2022. Given that 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 Google, *2019 research review: Traditional industries are transforming with digital*, THINK WITH GOOGLE (2019) <https://www.thinkwithgoogle.com/data-collections/mobile-search-statistics/>. 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.

⁸⁴ We reiterate our reservations regarding the availability of data and the risks for noise; we refer the reader to the Methodology section under “Post-Merger Rival Sales”.

competitors, mainly Microsoft, increased output. This could be a sign of heightened competition in the market post-acquisition which would undermine the idea of a competitive kill.⁸⁵ 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 ground over time, both ending up with output shares under ten percent. 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 are too recent to cast further light on our findings. It is too early, for example, to draw conclusions from Google/FitBit and Microsoft/ZeniMax.⁸⁶ That being said, these cases will be interesting candidates to follow in the future to evaluate the competitive landscape post-acquisition.

In summary, few cases in our sample demonstrate lower output following the merger. Although we cannot provide a causal link between the transaction and the post-merger output, in many cases output has risen regardless. This outcome does not support a weakening of competition, thereby casting some doubt on the potentially anticompetitive nature of these transactions.

Whereas the evidence seems hardly sufficient to support a killer acquisition scenario, 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 intensified organic competition or competitors making 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.

C. 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.

⁸⁵ SAP also continued to explicitly refer to Sybase's services in its 20-F reports.

⁸⁶ Notably, with the available data in mind, both cases produced industry growth after the transactions were consummated.

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 exit round 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

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

For SAP/Sybase, the first two events have not happened, whereas the third event is observed. For subsequent EC decisions, we note that the relevant market becomes 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 based on industry.⁸⁷ In general, the EC seems unkeen towards defining the market as EAS, and favours segmentation, often against the wishes of merging parties.⁸⁸ In recent cases, we observe greater focus concerning relevant markets, as segments of EAS themselves are dissected into sub-segments.⁸⁹ 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 occurred. 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 delineated a broader market titled “consumer communication apps”. It explicitly noted that, in light of transforming consumer demand, it is inappropriate to define the relevant market in terms of functionality (video communications, VoIP communications, and so on). 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, the COVID-19 pandemic triggered an exponential increase in the demand for video calls. 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 2021.⁹⁰

⁸⁷ For instance, IMS/CEGEDIM considered the relevant product market as “enterprise application software for healthcare businesses.” See, Case M.7337 IMS Health/CEGEDIM [2014].

⁸⁸ See, Case M.8984 HG/Vista/Allocate [2018]; Case M. 9447 Hitachi/ABB [2020].

⁸⁹ Case M.100060 Francisco Partners/MEP/CONAN Holdco [2021]; Case M.10290 Microsoft/Nuance [2021].

⁹⁰ Nadine F. Mendoza, *Zoom zips ahead of Google Meet, Microsoft Teams and Skype in one ranking*, TECH REPUBLIC (Mar. 31, 2021) <https://www.techrepublic.com/article/zoom-zips-ahead-of-google-meet-microsoft-teams-and-skype-in-one-ranking/>.

There is only one subsequent decision concerning Apple/Beats, which considered the “supply of headphones” as the relevant market. In a very recent case (decided in 2022), Hewlett-Packard (“HP”) acquired Plantronics (“Poly”), a communications technology company that produces, among others, headsets.⁹¹ This case fails the first and third test, and passes 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 or gaming, for example). At any rate, there was no discussion of widening the market, which fails the first test.⁹² Furthermore, we were unable to locate any acquisitions made by 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 some form of entry has taken place, which satisfies the second test.

Oracle/Micros concerned the enterprise application software market. The market is identical to the one considered in SAP/Sybase. Our findings in SAP/Sybase regarding the first and second events therefore hold for Oracle/Micros as well (narrower market definition and no new competitors). As regards the third event, we observe a strong response via 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.⁹³ 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, or freemium), 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

⁹¹ Case M.10737 HP/Poly [2022].

⁹² As a reminder, looking at the possible widening of market definitions is a proxy for measuring the introduction of new products.

⁹³ Case M. 8090 Tencent Holdings Limited/Supercell OY [2016].

considered in Activision/King made any acquisitions between 2016 – 2022. These findings suggest that all three of our events did not happen.⁹⁴

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.⁹⁵ By contrast, in recent cases we observe a further segmentation of the market.⁹⁶ But the general pattern is that there was no widening of the relevant market, indicating that the first event did not occur. We also do not observe any new competitors identified by the EC.⁹⁷ This fails the second event. Concerning the third event, we do not observe any acquisition by competitors after the merger, 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.⁹⁸

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.⁹⁹ Thus, our three tests remain unsatisfied. We can however report that entry occurred. Specifically, Imagine Marketing, with its boAt products, has emerged as an affordable

⁹⁴ 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] (Table IV). We also note that the gaming industry is very dynamic, necessitating ongoing study.

⁹⁵ Case M.8274 Cinven/Permira/Allegro/Ceneo [2016].

⁹⁶ For instance, in Case M.10385 Genstar Capital/TA Associates/Compusoft [2021].

⁹⁷ 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.

⁹⁸ Brian Heater & Ingrid Lunden, *Apollo completes its \$5B acquisition of Verizon Media, known as Yahoo*, TECH CRUNCH (Sep. 1, 2021) <https://techcrunch.com/2021/09/01/apollo-completes-its-5b-acquisition-of-verizon-media-now-known-as-yahoo/>.

⁹⁹ 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].

alternative. The company is prominently active in Asia and has recently completed its own acquisition of a Singaporean wearables producer.¹⁰⁰

Lastly, Microsoft/ZeniMax was completed in 2021. This means that the case is not suitable for the purposes of this exercise. Nevertheless, the fast-growing gaming sector has been at the forefront of competition debates for some time.¹⁰¹ 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.¹⁰² More broadly, alternative techniques of competition have emerged, including cloud gaming and subscription-based models (for example, Microsoft's Xbox game pass).¹⁰³ These trends align with business model innovation frequently observed in gaming markets.¹⁰⁴ 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).

CONCLUSION

Our research calls into question the plausibility of the killer acquisition theory, without however concluding that the killer acquisition theory is invalid. The main limitation here is that we only study a small number of transactions. We do not consider transactions below the jurisdictional thresholds necessary for them to be controllable under merger rules, which is where some consider the bulk of killer acquisitions happen.

Our work nonetheless is not bereft of policy implications. First, given that the killer acquisitions theory claims application in controllable

¹⁰⁰ *India's Imagine Marketing acquires Singapore's KaHa to boost wearable products*, TECHNODE GLOBAL (Jan. 18, 2022) <https://technode.global/2022/01/18/indias-imagine-marketing-acquires-singapore-kaha-to-boost-wearable-products/>.

¹⁰¹ Peter Zackariasson & Timothy L. Wilson, *Paradigm shifts in the video game industry*, 20 COMPETITIVENESS REV. 139 (2010).

¹⁰² In-house publishing of games enhances social welfare. See Tim P. Thomes, *In-house publishing and competition in the video game industry*, 32 INF. ECON. POL. 46 (2015).

¹⁰³ 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 choose to merge with larger studios and producers. For an overview of the industry dynamics, see JOOST VAN DREUNEN, *ONE UP: CREATIVITY, COMPETITION, AND THE GLOBAL BUSINESS OF VIDEO GAMES* (Columbia Business School Publishing 2020).

¹⁰⁴ 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*, 174 TECHNOL. FORECAST. SOC. CHANGE 121210 (2022).

transactions, we now can say that there is no strong evidential basis to make merger policy stricter for cases above the jurisdictional thresholds. 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 theory concerns uncontrollable transactions, there is no evidential basis to support a change in merger policy unless one can establish that the competitive effects observed for controllable transactions do not hold under the jurisdictional thresholds of merger control. In other words, a reform of merger policy would require proving that transactions involving firms with limited revenue are more susceptible to a "kill" than larger ones. Currently, the only evidence that exists in support of this conjecture is intuitive. One possible conjecture would be that more anticompetitive mergers happen below the jurisdictional thresholds, because the sunk costs of shutting down a project would be smaller when the transaction involves a nascent firm.

Our work is also relevant to future research. By developing and testing a series of null hypotheses, , our inquiry found that they were rejected more often than not. In the future, widening the sample to cases in different jurisdictions can provide fruitful ways to find out if the theory of killer acquisitions is wrong. A cursory analysis of UK cases indicate that some transactions may have entailed a killing (or weakening) of the target's product. For example, there have been anecdotal reports that the Office of Fair Trading's review of Google's acquisition of BeatThatQuote had been followed by an episode of post-merger quality degradation.¹⁰⁵ Similarly, Google's acquisition of Waze may merit attention now that it appears clear in hindsight that Waze might have tipped a large share of the digital navigation market. Although suspicious transactions are still very low in number, such cases constitute promising candidates for an application of our three-step methodology. Looking at more cases in different jurisdictions through the lenses of our method would be useful to evaluate the robustness of our preliminary conclusion that the support for a restrictive merger policy in digital markets is not granted at this point.

¹⁰⁵ U.K. OFFICE OF FAIR TRADING, *Google/BeatThatQuote.com* (2011).

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-U.S. firms, we convert the revenue based on that year’s average exchange rate for the relevant currency.

A. SAP/SYBASE

SAP acquired Sybase in 2010. The EC decision identified the relevant product market as “enterprise application software”.¹⁰⁶ 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 firm output 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

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

¹⁰⁶ Case No. COMP/M.5904 – SAP/SYBASE [2010].

CHART – A1: SAP/SYBASE EVOLUTION OF TOTAL SALES

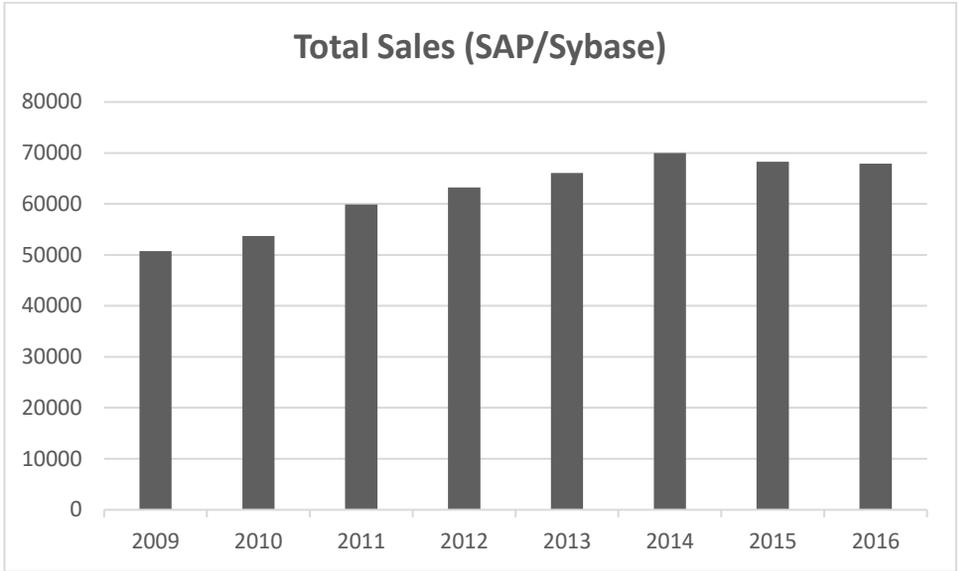
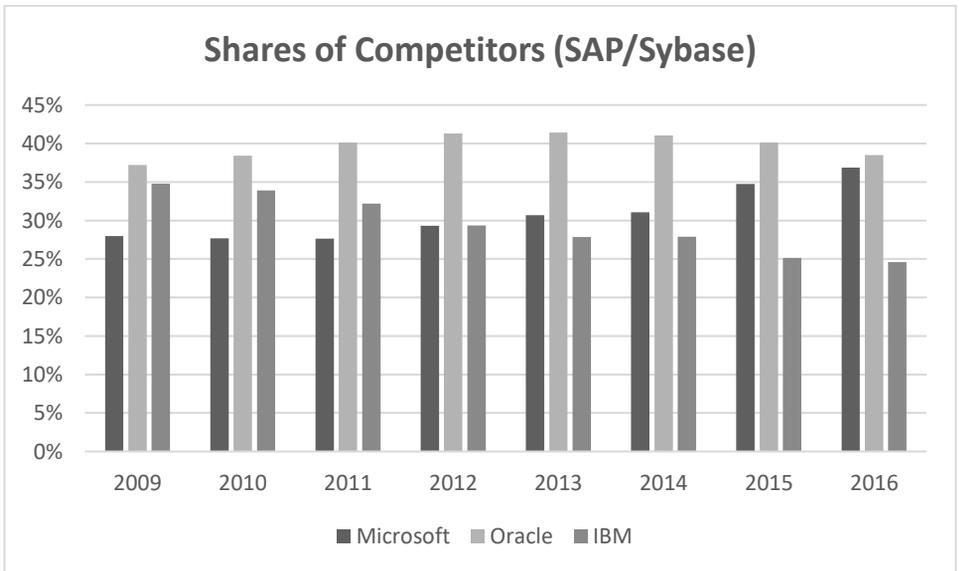


CHART – A2: SAP/SYBASE EVOLUTION OF COMPETITOR OUTPUT



B. 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.¹⁰⁷

TABLE – IV: MICROSOFT/SKYPE 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
FY2010	29321	6324	2416	38061	77%	17%	6%
FY2011*	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

¹⁰⁷ We note that these segments supply imperfect data, since their broad definition introduces noise to our analysis.

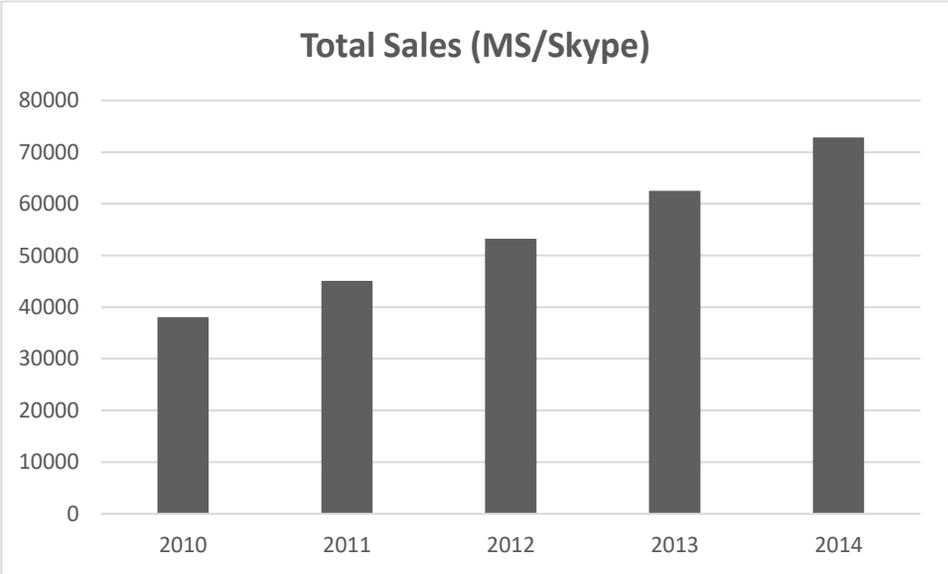
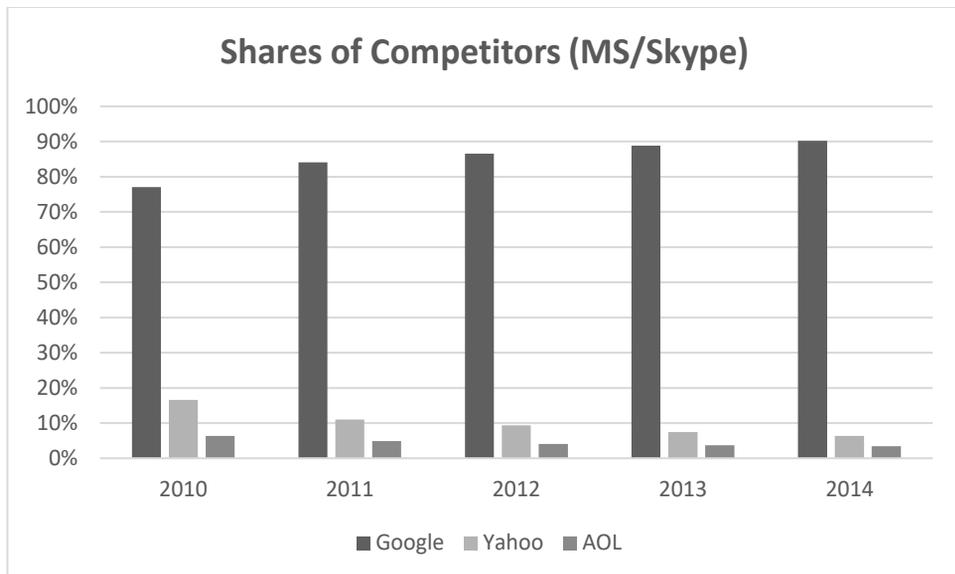


CHART – B2: MICROSOFT/SKYPE EVOLUTION OF COMPETITOR OUTPUT



C. 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)		Total sales	MS of SIC 1	MS of SIC 2
	1	2			
FY2013	2780	2986	5766	48%	52%
FY2014*	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

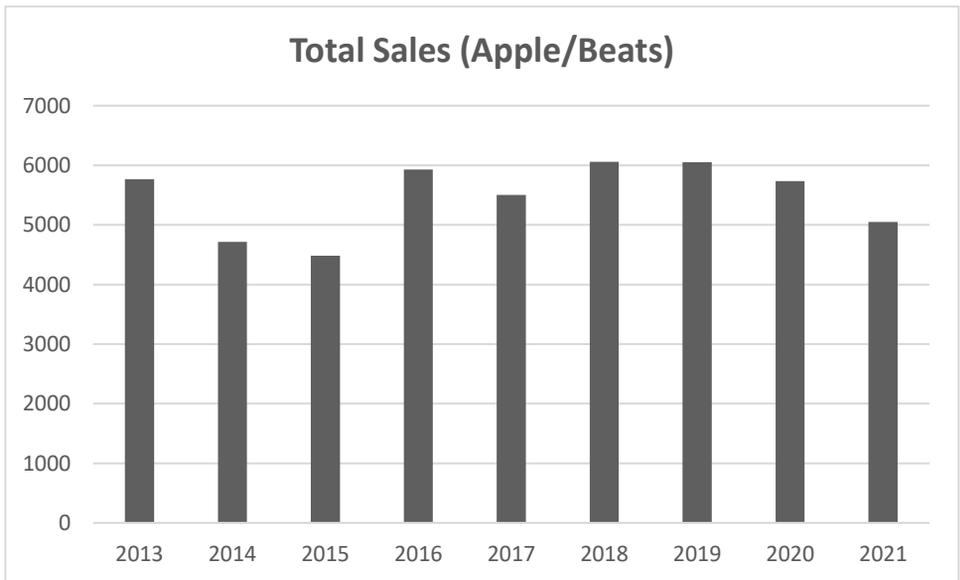
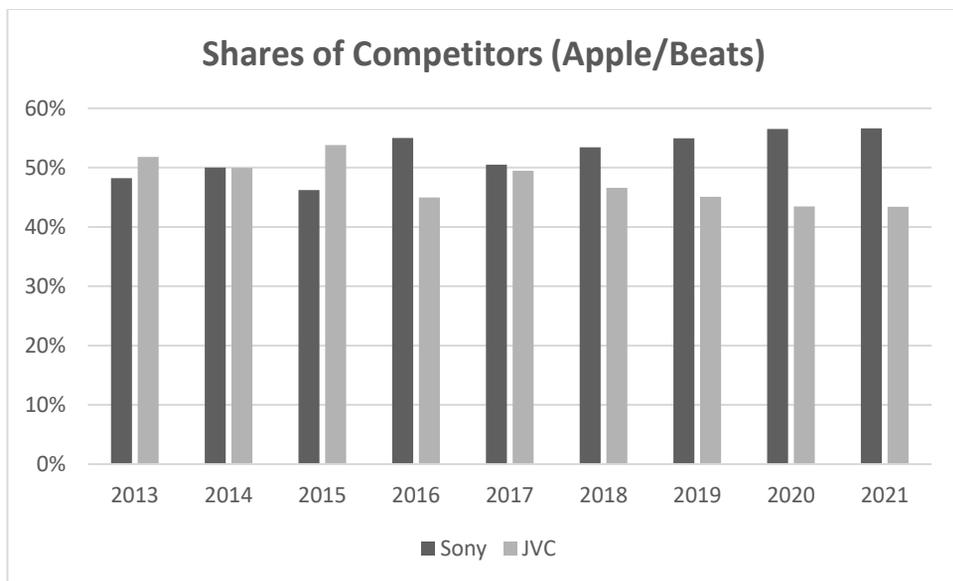


CHART – C2: APPLE/BEATS EVOLUTION OF COMPETITOR OUTPUT



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 nine percent share of sales in 2021 compared to the pre-merger situation.

D. ORACLE/MICROS

In 2014, Oracle acquired Micros, a US-based hardware and software developer that worked extensively with retail and hospitality industries.¹⁰⁸ 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

¹⁰⁸ Case No. M.7334 – Oracle/Micros [2014].

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

	SIC 1	SIC 2	SIC 3	Total sales	MS of SIC 1	MS of SIC 2	MS of SIC 3
FY2013	18396	2660	2582	23638	78%	11%	11%
FY2014*	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

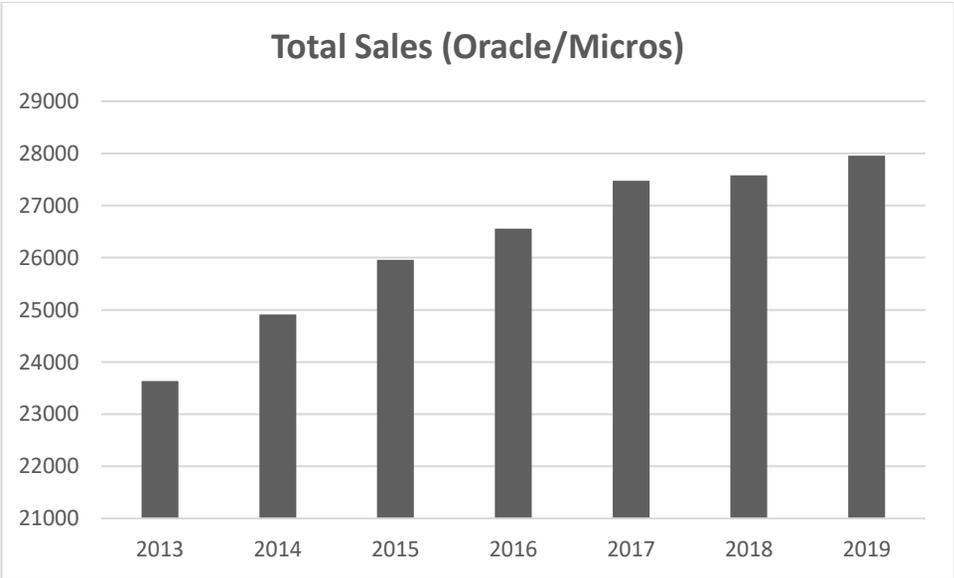
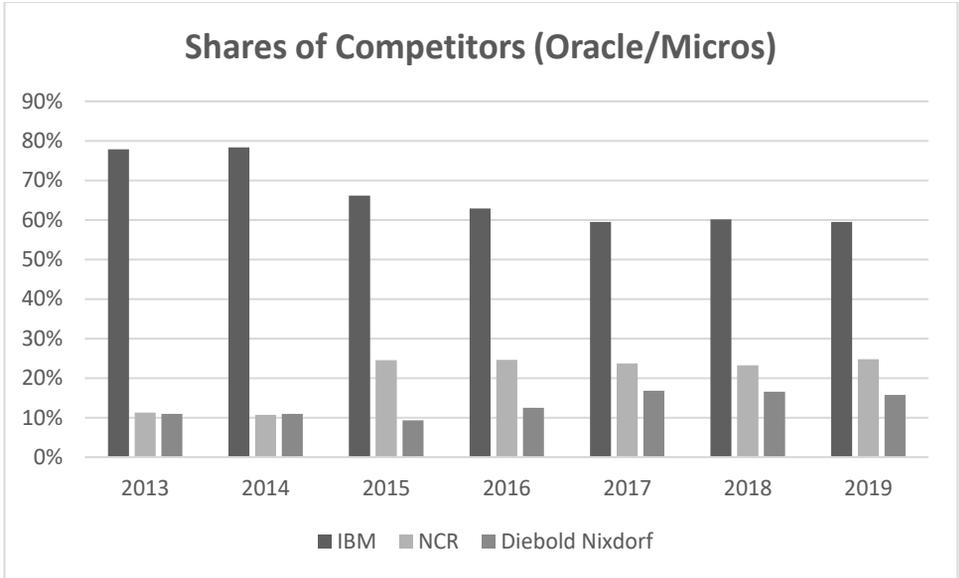


CHART – D2: ORACLE/MICROS EVOLUTION OF COMPETITOR OUTPUT



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 output. 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 percent to around 17 percent.

E. 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%
FY2016*	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

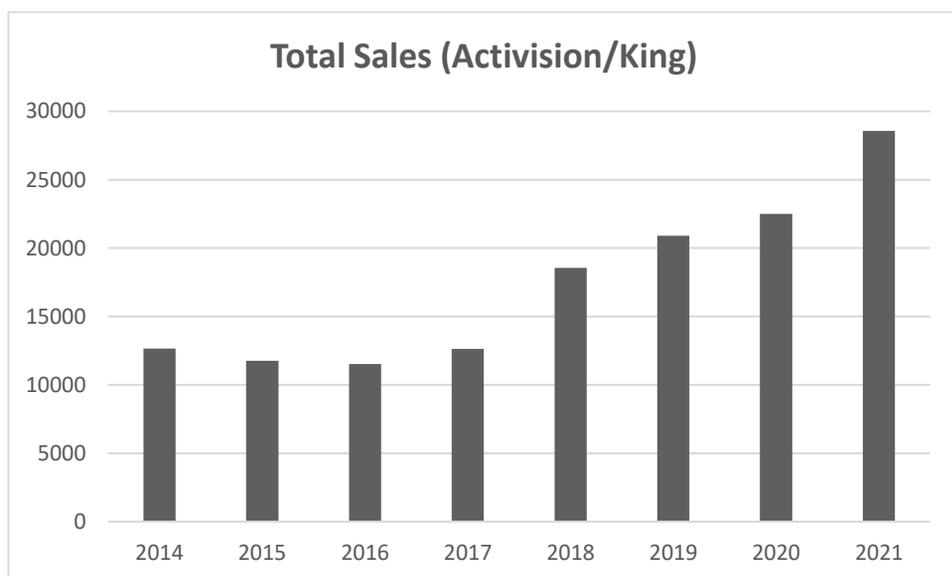
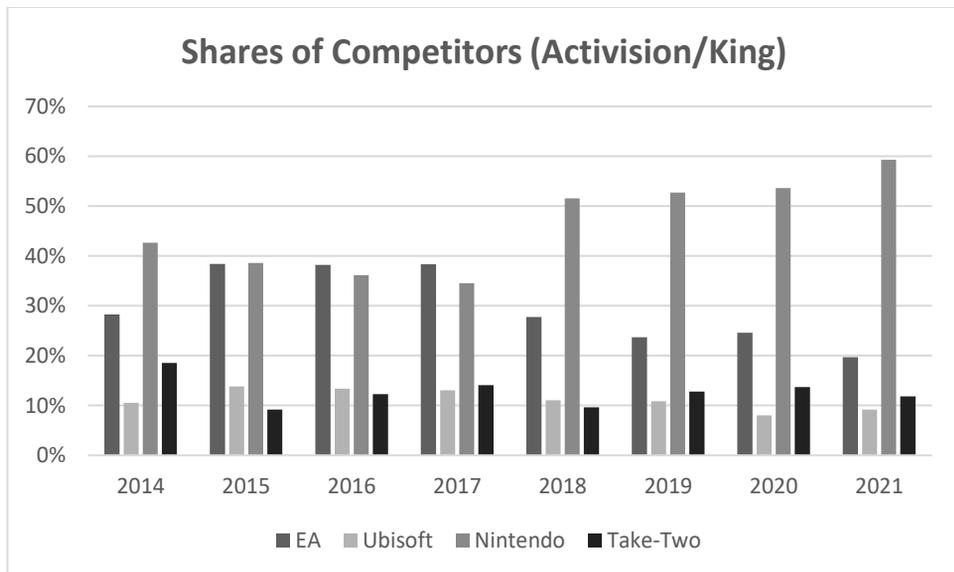


CHART – E2: ACTIVISION/KING EVOLUTION OF COMPETITOR OUTPUT



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 percent, while its rivals, EA and Take-Two, experienced steady decline.

F. 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)				Total sales	MS of SIC 1	MS of SIC 2	MS of SIC 3	MS of SIC 4
	1	2	3	4					
Y2014	4071	10542	22409	798	37820	11%	28%	59%	2%
Y2015	5373	10025	21229	937	37564	14%	27%	57%	2%
Y2016*	6667	9498	22279	1180	39624	17%	24%	56%	3%
Y2017	8347	10098	23898	1553	43896	19%	23%	54%	4%
Y2018	10540	11113	25692	1949	49294	21%	23%	52%	4%
Y2019	13282	10572	25735	2280	51869	26%	20%	50%	4%
Y2020	17098	11019	26226	2660	57003	30%	19%	46%	5%
Y2021	21252	11713	28174	3379	64518	33%	18%	44%	5%

CHART – F1: MICROSOFT/LINKEDIN EVOLUTION OF TOTAL SALES

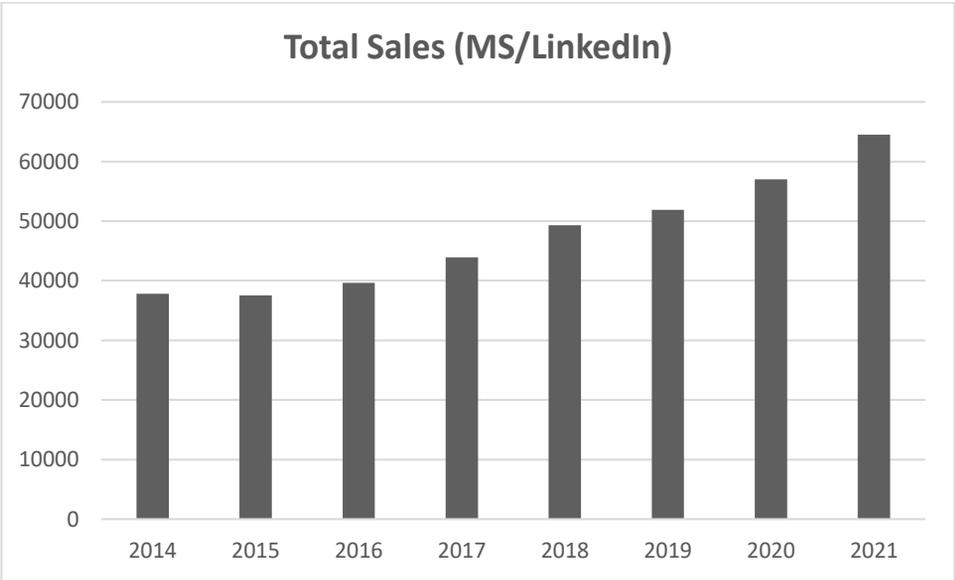
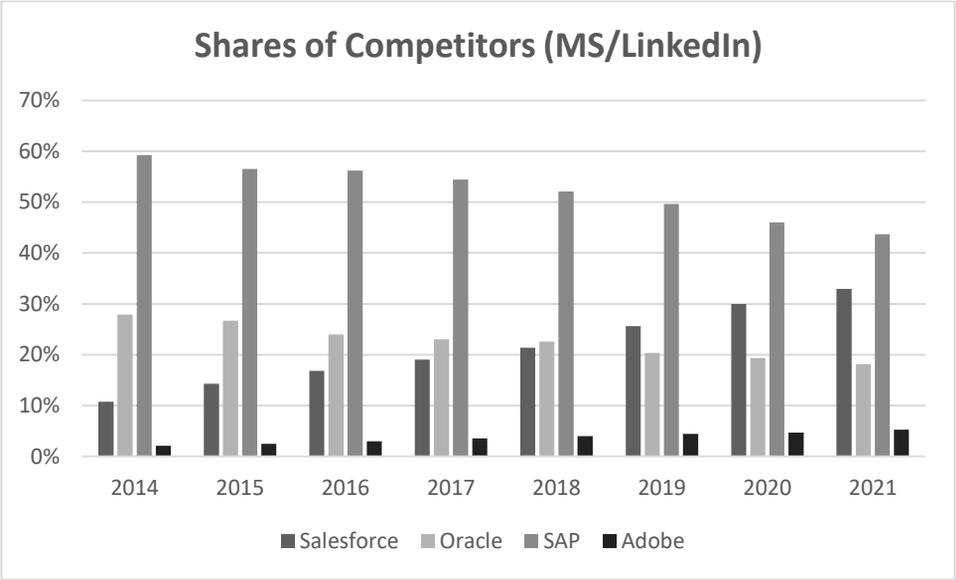


CHART – F2: MICROSOFT/LINKEDIN EVOLUTION OF COMPETITOR OUTPUT



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.¹⁰⁹

¹⁰⁹ See Case M. 8124 Microsoft/LinkedIn [2016], para. 201; see also Case M. 10290 Microsoft/Nuance [2021], para. 280.

G. VERIZON/YAHOO

Verizon acquired Yahoo in 2016.¹¹⁰ 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, 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%
FY2016*	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

¹¹⁰ Case M.8180 – Verizon/Yahoo [2016].

Total Sales (Verizon/Yahoo)

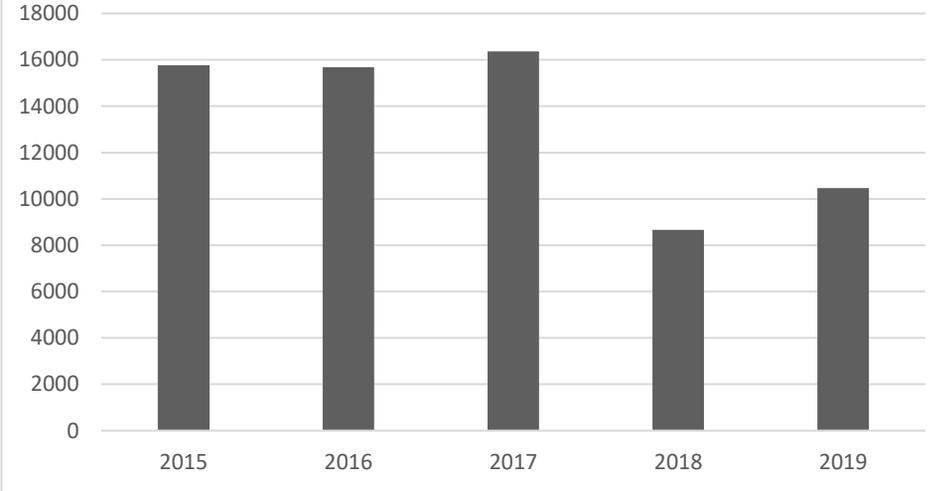
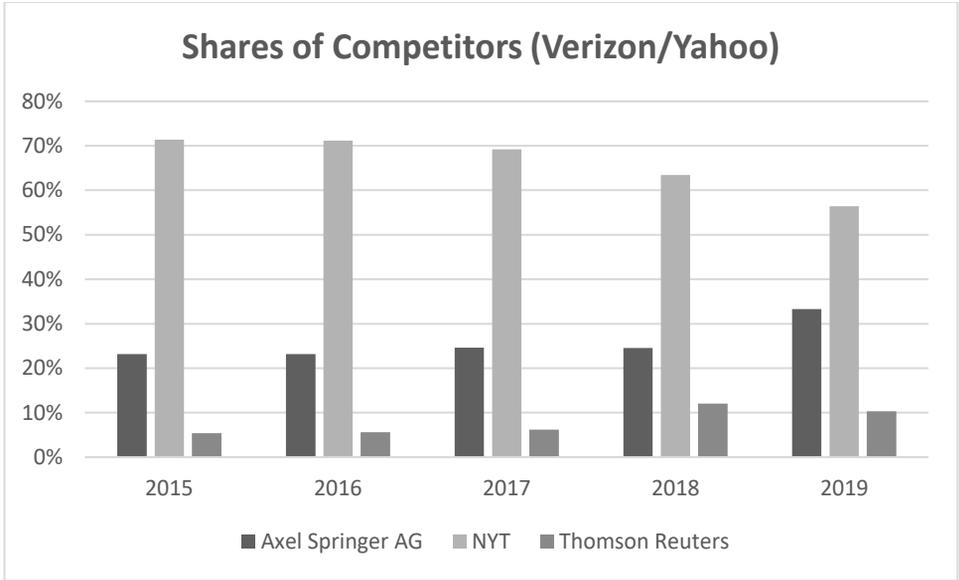


CHART – G2: VERIZON/YAHOO EVOLUTION OF COMPETITOR OUTPUT



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 output. 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.

H. GOOGLE/FITBIT

Google acquired FitBit, a technology company mainly concerned with the production and sales of wearable devices (for example, fitness trackers), in 2020. In Google/FitBit, the EC decision considered the relevant market as “wrist-worn wearable devices”.¹¹¹ 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, centered 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

¹¹¹ Case M.9660 – Google/FitBit [2020].

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.¹¹² For Apple, we consider “Wearables, Home, and Accessories” segment. For Garmin, we use overall revenue.¹¹³ Each of these segments correspond to reporting categories in which sales data for wearables are located.

TABLE – X: GOOGLE/FITBIT 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
12863	3469	94372	762	35148	146614	9%	2%	64%	19%
17381	6608	91479	858	52617	168943	10%	4%	54%	19%
24482	8985	92051	1047	67627	194192	13%	5%	47%	19%
30620	9769	84438	1317	69987	196131	16%	5%	43%	19%
38367	13169	95410	1533	37724	186203	21%	7%	51%	19%

CHART – H1: GOOGLE/FITBIT EVOLUTION OF TOTAL SALES

¹¹² We note that this segment also includes mobile phones, which comprise a large portion of Samsung’s sales.

¹¹³ This is because Garmin’s entire product portfolio is oriented around wearable devices.

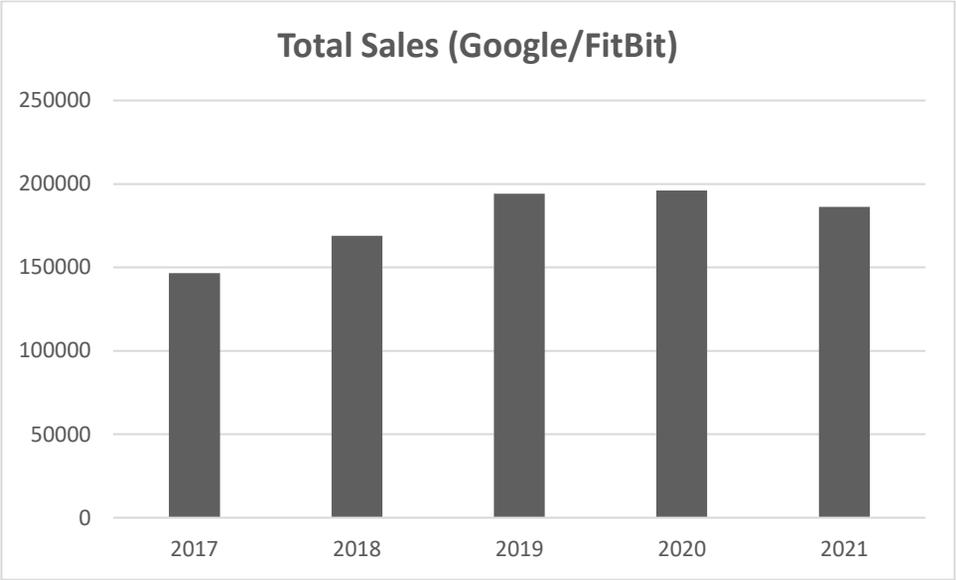
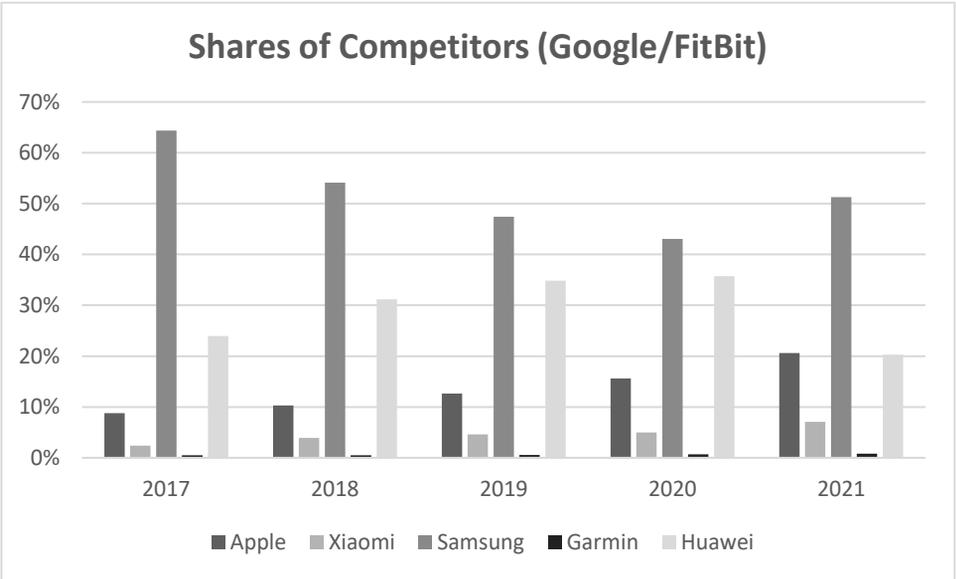


CHART – H2: GOOGLE/FITBIT EVOLUTION OF COMPETITOR OUTPUT



I. 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
3575	5397	4408	2350	1337	17067	21%	32%	26%	14%
4515	4541	4464	1082	1624	16226	28%	28%	28%	7%
4396	4164	6608	1414	1543	18125	24%	23%	36%	8%
4845	4361	7017	1780	1650	19653	25%	22%	36%	9%
5150	9561	7500	1793	2046	26050	20%	37%	29%	7%
4950	11014	6489	2668	2272	27393	18%	40%	24%	10%
5537	12072	8086	3089	1812	30596	18%	39%	26%	10%
5629	16929	8803	3373	2631	37365	15%	45%	24%	9%

CHART – J1: MICROSOFT/ZENIMAX EVOLUTION OF TOTAL SALES

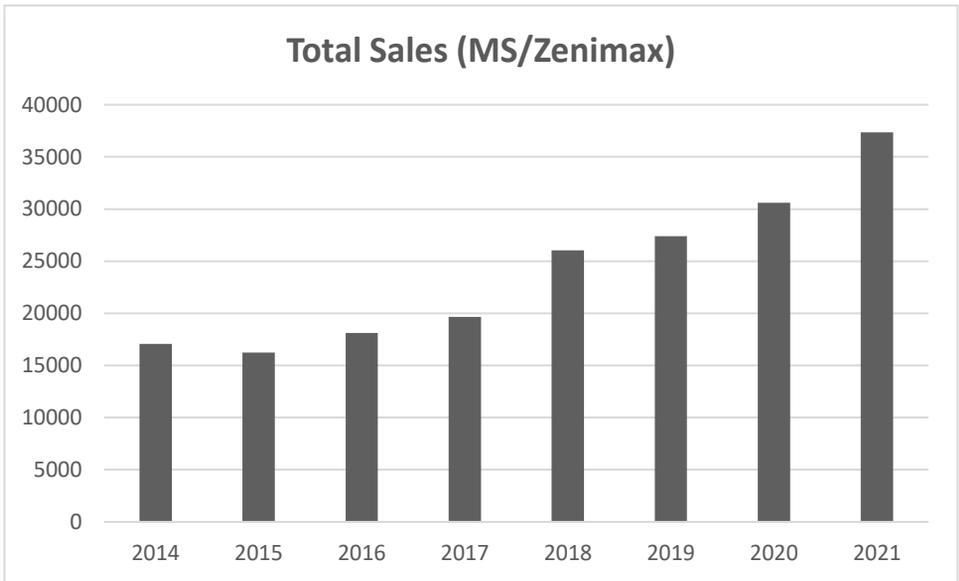
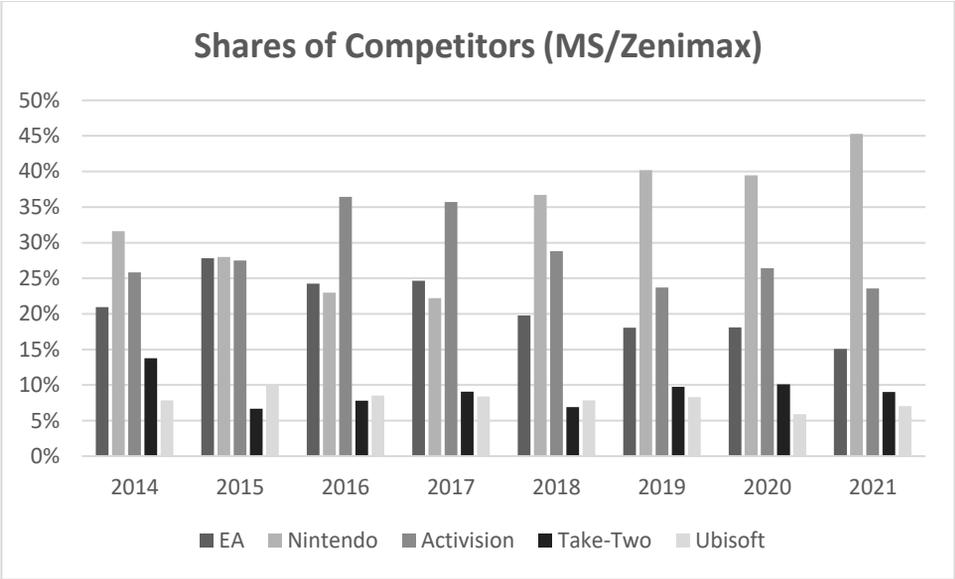


CHART – J2: MICROSOFT/ZENIMAX EVOLUTION OF COMPETITOR OUTPUT



ABSTRACT

- The killer acquisitions theory states that established firms buy new businesses to pre-empt future competition, particularly in the pharmaceutical and digital industries. The theory fuels demand to make merger policy more restrictive.
- But is the theory of killer acquisitions supported by empirical facts?
- Focusing on past investigations by the European Commission in information technology industries, this article studies whether acquisitions by large technology companies reduce competition by eliminating future rivalry.
- Despite the small sample size, the findings suggest that none of the reviewed transaction was followed by the disappearance of the target's products, a weakening of competing firms, and/or a post-merger lowering or absence of entry and innovation.

Keywords: killer acquisitions, case study, dynamic competition, innovation, mergers and acquisitions, nascent competitors

JEL Classification: G34, L41, L86, O31