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Revisiting theories of harm: a framework for assessing mergers in the digital ecosystem

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1. *Introduction*

Merger control constitutes a central pillar of European competition law, serving to safeguard market structure and consumer welfare.[1] Codified initially in Regulation (EC) n. 4064/89 and subsequently in Regulation (EC) No. 139/2004,[2] the EU Merger Regulation entrusts the European Commission (the "Commission") with the task of preventing concentrations that may significantly impede effective competition. The analytical framework has long rested on established theories of harm – horizontal, vertical and conglomerate – each designed to identify mechanisms through which mergers may diminish competitive pressure, raise rivals' costs or stifle innovation.[3] While horizontal and vertical mergers have dominated the enforcement practice, conglomerate

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[1] *See* also O. PALLOTTA, *Le funzioni dell'antitrust (alla prova di resistenza dell'Unione europea),* in this *Review*, No. 2, 2025, available here.

[2] Council Regulation (EC) No 139/2004 of 20 January 2004 on the control of concentrations between undertakings ("EUMR"), available here.

[3] Commission, *Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings* ("HMG"), 2004, OJ C31/5, available here; and *Guidelines on the assessment of non-horizontal mergers*, 2008, OJ C265/6, available here.

theories have historically attracted less attention, reflecting their perceived speculative character.[4]

The inherent limitations of this established orthodoxy have, however, been profoundly illuminated by the pervasive digitalisation of the economy. Digital markets fundamentally distinguish themselves from conventional industrial structures, being characterised by pronounced network effects, data-driven advantages,[5] the widespread prevalence of multi-sided platforms, user lock-in effects and often barriers to market entry.[6] These characteristics complicate market definition and erode the predictive utility of traditional tools.[7]

In this context, a considerable number of digital merger cases involve nascent or non-revenue generating firms where conventional market share metrics offer only circumscribed analytical utility and the true competitive significance rests squarely on future potential rather than current market position. Against this backdrop, it is increasingly evident that value creation manifests across complex *ecosystems* of interrelated products and services, rather than being confined within narrowly defined, isolated markets.

The notion of *ecosystem* has gained prominence in competition law, especially in mergers involving major digital platforms.[8] Unlike traditional market structures, ecosystems consist of interconnected products and services

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[4] *See* P. REGIBEAU, K.E. ROCKETT, *Competition policy for conglomerates, platforms, and eco-systems,* in *Competition and Regulation in Network Industries,* Vol. 22, No. 4, 2021, pp. 317–342, available here (noting expressly that "*the theories of harm considered in the context of such mergers will be more speculative*"); E. GARCES, O. KOZLOVA GUGLIELMI, D. REILLY, *Ecosystem Theories of Harm in Merger Enforcement: Current Direction and Open Questions,* in *Journal of European Competition Law & Practice*, Vol. 15, 2024, p. 272, available here.

[5] *See* also G. PITRUZZELLA, *Big Data and Antritrust Enforcement*, 2017, pp. 81-83, available here.

[6] *See* also infra, Section 2.

[7] Y.-A. MONTJOYE, H. SCHWEITZER, J. CREMER, *Competition policy for the digital era*, Publications Office of the European Union, 2019, available here. *See also* J. FURMAN et al., *Unlocking digital competition: Report of the Digital Competition Expert Panel, HM Treasury,* 2019, available here; OECD, *Handbook on Competition Policy in the Digital Age,* OECD Publishing, Paris, 2022, available here; UK CMA, *Online platforms and digital advertising: Market study final report,* 2020, available here; BUNDESKARTELLAMT, *Annual Report 2021/22,* Bonn, 2022, available here.

[8] For the notion of ecosystem, *see* M.G. JACOBIDES, C. CENNAMO, A. GAWER, *Towards a Theory of Ecosystems*, in *Strategic Management Journal*, Vol. 39, No. 8, 2018, pp. 2255-2276, available here; M.G. JACOBIDES, I. LIANOS, *Ecosystems and competition law in theory and practice*, in *Industrial and Corporate Change*, Vol. 30, No. 5, 2021, pp. 1199-1229, available here; F. JENNY, *Competition Law and Digital Ecosystems: Learning to Walk Before We Run*, in *Industrial and Corporate Change*, Vol. 30, No. 5, 2021, pp. 1143 -1167, available here; OECD, *Digital competition policy: Are ecosystems different?*, OECD Publishing, Paris, 2020, available here.

that may reinforce dominance through integration, data sharing and user lock-in. This dynamic can entrench market power, thereby rendering effective competition by rivals considerably more challenging. In particular, it elucidates the inherent limitations of traditional theories of harm, which historically have focused predominantly on the analysis of discrete, isolated markets.

This article therefore examines the continued efficacy of existing theories of harm in the assessment of digital mergers, exploring avenues for their reconceptualization to account for emergent ecosystem effects. Central to this enquiry is the following research question: How (and, even before, if) can traditional theories of harm be revisited to effectively assess mergers within the evolving architecture of digital ecosystems under EU competition law?

To address this question, this paper is structured as follows. The second section explores the anatomy of digital markets, analysing in turn the role of network effects and market tipping, the competitive significance of data accumulation, the impact of economies of scale and scope and the barriers to market entry that result. The third section turns to the theoretical foundations of harm, first highlighting the limitations of traditional frameworks in the digital context, then developing the emerging ecosystem theory of harm and finally examining the *Booking/Etraveli*[9] decision as a potential milestone in the recognition of ecosystem concerns. The fourth and final section draws together the findings and advances some conclusive reflections on the future of merger control in digital markets.

2. *The anatomy of digital markets*

Over the past decade, digital markets have progressively evolved into complex *ecosystems*, structured around platforms that mediate the exchange of goods, services and information. Distinguished from traditional markets by their reliance on internet-based infrastructures and data-driven business models, they operate on a global scale, enabling cross-border interaction and real-time transactions between consumers and firms.

A salient feature of these markets is the prevalence of network effects, whereby the value of a platform increases with the number of its users.[10] Such dynamics frequently result in market tipping and "winner-takes-all" scenarios,

[9] *See* Commission, Case No. M.10615 - *Booking Holdings/Etraveli Group*, recital 4 and ME/6991/22 - Anticipated acquisition by Booking Holdings Inc. of certain activities of eTraveli Group AB, 29 September 2022.

[10] Turkish Competition Authority, *The Impact of Digital Transformation on Competition Law*, Ankara: Supervision and Enforcement Department, 2023, available here.

consolidating the position of a few dominant actors and raising substantial barriers to entry. Equally central is the role of data: the ability to collect, analyse and deploy vast quantities of user information not only enhances personalisation and predictive capacity, but also entrenches competitive advantages.[11]

These structural characteristics generate significant challenges for competition law and regulation. Traditional frameworks, designed for slower-moving industrial markets, often prove inadequate in addressing the pace of digital innovation. Particular concern has arisen over "killer acquisitions", whereby incumbent firms acquire nascent competitors in order to pre-empt future rivalry.[12] The phenomenon has attracted sustained academic and policy attention, fuelling debate as to whether merger control requires recalibration to counteract increasing concentration in digital markets.[13]

Thus, digital markets are defined by network effects, data centrality, economies of scale and scope, formidable entry barriers, and near-zero marginal and distribution costs.[14] These features underscore both the opportunities and the systemic risks they present, thereby necessitating a clear theoretical framework before considering how traditional theories of harm might be adapted to mergers in the digital domain.

2.1. *Network effects and market tipping*

Digital platforms are software systems that facilitate exchanges between providers and consumers and form the backbone of broader digital ecosystems.[15] By mediating interactions within a two-sided or multi-sided structure, platforms such as, for instance, Amazon, Uber and Airbnb[16] act as

[11] *See* also G. PITRUZZELLA, *Big Data, Competition and Privacy: A Look from the Antitrust Perspective*, 2016, available here.
[12] *See* OECD, *Start-ups, Killer Acquisitions and Merger Control*, 2020, available here.
[13] G. SONDEREGGER, *Killer Acquisitions in Digital Markets: An Analysis of the EU Merger Control Regime*, EIZ Publishing, 2024, p. 9, available here.
[14] On near-zero marginal and distribution costs as a defining feature of digital markets, *see* C. SHAPIRO, H.R. VARIAN, *Information Rules: A Strategic Guide to the Network Economy,* Harvard Business School Press, 1999, pp. 3–5; OECD, *Handbook on Competition Policy in the Digital Age,* OECD Publishing, Paris, 2022, p. 18, available here; and J. FURMAN ET AL., *Unlocking digital competition,* HM Treasury, 2019, p. 22, available here.
[15] M. KOCH, D. KROHMER, M. NAAB, D. ROST, M. TRAPP, *A matter of definition: Criteria for digital ecosystem*, in *Digital Business*, Vol. 2, No. 2, 2022, available here.
[16] These examples have been intentionally chosen to demonstrate that the phenomenon extends across a wide range of platforms, irrespective of the industry.

intermediaries that connect asset providers with users and enable continuous flows of goods, services and information.

A defining feature of such platforms is the presence of network effects: the value of a service increases as more users join.[17] Network effects can be direct – whereby the utility of a service increases for each user as other users join, as occurs, classically, with telephone networks – or indirect – whereby growth on one side of a platform increases the platform's attractiveness to users on the other side.[18]

Social networks exemplify both types simultaneously: on the one hand, each additional user directly increases the network's value for existing users (direct effect); on the other hand, a larger user base on the consumer side makes the platform significantly more attractive to advertisers on the opposite side of the market (indirect effect). Video game platforms illustrate the indirect dynamic more clearly: a larger player base attracts more game developers, whose additional titles in turn attract further users, in a mutually reinforcing loop.[19] This self-reinforcing dynamic often produces market tipping, whereby early advantages allow a platform to establish dominance and create barriers for later entrants.[20]

These processes are further strengthened by switching costs and lock-in effects which discourage users from migrating to competitors even when superior alternatives exist. The result is a "winner-takes-all" or "winner-takes-most" environment in which a small number of firms consolidate market power. To sustain this dominance, platforms frequently employ data-driven strategies and acquisitions, reinforcing their position in rapidly evolving markets.

Consequently, competition in digital markets is less about incremental rivalry within a stable structure than about capturing the market itself. Success depends on reaching critical mass, leveraging network effects and continuously innovating to adapt to dynamic consumer demand and technological change.[21]

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[17] A. DESCAMPS, H. JENKINS and L. BARROS, *Tipping: Should Regulators Intervene Before or After? A Policy Dilemma*, Oxera, 2021, available here.

[18] *See* T. STOBIERSKI, *What Are Network Effects?*, Harvard Business School, November 2020, available here.

[19] A. IVEY, *What Is the Network Effect?,* Cointelegraph, 2023, available here. *See* also UK CMA, *Online platforms and digital advertising: Market study final report*, July 2020, para. 2.10, available here.

[20] *See* OECD, *Handbook on Competition Policy in the Digital Age*, 2022, p. 24, available here; and J. FURMAN ET AL., *Unlocking digital competition*, 2019, p. 20, available here.

[21] F. MANJOO, *Why We May Soon Be Living in Alexa's World,* in *The New York Times*, 2018, available here.

2.2. *Data accumulation in a rapidly evolving landscape*

Digital markets are inherently dynamic, shaped by rapid technological innovation, short product cycles and shifting consumer demands.[22] This dynamism coexists with, and is indeed partly sustained by, the lock-in effects described above: precisely because users face switching costs, yet retain the ability to reallocate their attention, reduce usage, or engage in multi-homing, incumbent platforms are incentivised to continuously innovate in order to sustain user engagement and limit partial or gradual user defection.[23]

Innovation is both a prerequisite for survival and a mechanism for expansion, with firms leveraging technological advances, vertical integration and data accumulation to consolidate their market positions. These dynamics complicate traditional tools of competition analysis.[24] Market definition is particularly challenging, since services frequently converge and evolve, as also shown by the Commission's approach in *Facebook/WhatsApp.*[25] Similarly, market shares are an unreliable indicator of power since competitive positions may shift within short timeframes; this was acknowledged by the EU General Court in *Microsoft/Skype*,[26] which stressed that high market shares in fast-moving markets may not imply durable dominance.[27]

Nevertheless, where high shares intersect with strong network effects, market power may be reinforced. Data further intensifies this dynamic, as large datasets enable firms to enhance services, improve advertising and expand into adjacent markets. Although the Commission has not recognised data as a standalone product market, it has addressed data aggregation within merger assessments, treating it as a horizontal effect in markets such as online advertising.

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[22] OECD, *Handbook on Competition Policy in the Digital Age,* 2022, p. 64, available here.
[23] Lock-in reduces the ease of switching to existing rivals but does not eliminate the threat of disruptive innovation that makes an entire platform obsolete. *See* N. PETIT, *Big Tech and the Digital Economy: The Moligopoly Scenario,* Oxford University Press, 2020, Chapter 4; OECD, *Handbook on Competition Policy in the Digital Age*, 2022, p. 30, available here.
[24] Competition Policy International, *Antitrust Chronicle: The Digital Economy – Mergers*, 2018, Vol. 2, 2018, available here.
[25] Commission, Case No. M.7217 - *FACEBOOK/WHATSAPP,* 3 October 2014, available here.
[26] Commission, Case No. M.6281 - *MICROSOFT/ SKYPE*, 7 October 2010, available here.
[27] Competition Policy International, *Antitrust Chronicle: The Digital Economy – Mergers*, 2018, Vol. 2, 2018, available here.

More recent decisions in *Google/Fitbit, Microsoft/Activision Blizzard and Amazon/iRobot*[28] illustrate the Commission's nuanced approach: competition concerns may arise if data aggregation eliminates head-to-head rivalry or raises entry barriers, but such risks are case-specific and contingent on the accessibility of alternative datasets.

2.3. *The impact of economies of scale and scope*

Economies of scale and scope constitute defining features of digital markets.[29] Economies of scale arise from the combination of high fixed and sunk costs with low variable costs, enabling incumbents to spread costs over vast user bases and, thus, achieve significant cost advantages.[30] This dynamic is particularly pronounced in two-sided platforms, where established firms can cross-subsidise user groups, leverage superior data access and reinforce market dominance. Search engines exemplify this phenomenon, where costly algorithm development contrasts with negligible marginal delivery costs.

Economies of scope, by contrast, derive from efficiencies in producing multiple products within the same firm, particularly when inputs, infrastructure or user data can be shared. In digital markets, scope advantages are amplified by the ability to repurpose technological investments, exploit existing customer relationships and utilise data across services.[31] This allows dominant platforms to expand into adjacent markets at lower cost, extend user lock-in and form ecosystems that raise entry barriers by requiring new competitors to enter multiple markets simultaneously.

Global technology firms, such as the various so-called "GAFAM" and "BAT",[32] illustrate the cumulative effects of scale and scope. Their ability to diversify across sectors – often by deploying common inputs like artificial intelligence, data and infrastructure – has entrenched their ecosystems and made competitive entry increasingly difficult. In this way, economies of scale

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[28] Commission, Case No. M.9660 – *Google/Fitbit,* 17 December 2020, available here; Case No. M.10996 – *Microsoft/Activision Blizzard, 15 May 2023, available here;* Case No. M.11480 – *Amazon/iRobot,* abandoned January 2024 following Statement of Objections of November 2023, available here.

[29] G. SONDEREGER, *Killer Acquisitions in digital markets: An Analysis of the EU Merger Control Regime*, p. 28, available here.

[30] International Competition Network (ICN), *Topics on Assessment of Dominance in Digital Markets*, April 2024, available here.

[31] *Ibidem.*

[32] The acronym GAFAM refers to Google (Alphabet), Apple, Facebook (Meta), Amazon and Microsoft, the five largest US-based digital platforms by market capitalisation and ecosystem reach. BAT refers to their principal Chinese counterparts: Baidu, Alibaba and Tencent.

and scope not only consolidate incumbents' advantages, but also structure the competitive dynamics of the digital economy.[33]

2.4. *Possible barriers to market entry*

Although no universally accepted definition exists, barriers to entry are generally understood as factors that prevent or significantly impede new firms from entering a market. The Commission describes them as «specific features of the market which give incumbent firms advantages over potential competitors».[34] These barriers can arise from legal, technical and economic constraints, including sunk costs (irrecoverable expenditures that deter entry), product differentiation advantages (brand loyalty or proprietary technologies difficult to replicate), economies of scale (cost advantages favouring larger firms) and access to specialized knowledge or intellectual property.

As anticipated above, digital markets exhibit structural features – such as strong network effects, data-driven economies of scale and entrenched ecosystems – that could create substantial obstacles for new entrants.[35] Incumbents might benefit from extensive user bases and vast datasets, enabling them to refine services, predict consumer behaviour and lock users into their platforms. For a newcomer, merely offering a superior product could result as insufficient; it must deliver value significantly greater than that of the incumbent to overcome switching costs, especially when services are provided free of charge.

The growing reliance on artificial intelligence and machine learning are potentially able to further entrench these barriers since access to large-scale data becomes a prerequisite for competitiveness. While multi-homing (use of multiple services) may alleviate some entry challenges, convenience costs and ecosystem lock-in frequently limit its effect.[36]

Moreover, incumbents exploit information asymmetries to shape consumer choices and reinforce their dominance often through default settings, strategic presentation of information or leveraging behavioural biases. Similarly, the increasing sophistication of artificial intelligence enables firms to

[33] W. OWEN, *Google's deep focus on AI is paying off,* available here.
[34] Commission, HMG, Official Journal C 31, para. 70, February 2004, available here.
[35] G. SONDEREGER, *Killer Acquisitions in digital markets: An Analysis of the EU Merger Control Regime,* p. 30, available here.
[36] J. DAVIES, S. KHODJAMIRIAN, F. GIALLOMBARDO, P. ALETTI, *Survey Evidence on User Multi-Homing in Online Retail Businesses*, Compass Lexecon, available here.

identify and exploit cognitive biases, subtly guiding consumer behaviour to protect their market power and deter disruptive innovation.

Exclusionary practices further compound these barriers. Dominant platforms may deny access to critical infrastructures or restrict interoperability to prevent the emergence of viable competitors.

Consequently, barriers to entry in digital markets are not solely structural but could be actively reinforced by strategic behaviour. Data accumulation, ecosystem control and exclusionary tactics combine to entrench incumbents' positions, reduce competitive pressure and eventually hinder innovation. Ensuring fair access to essential platforms and promoting interoperability are thus critical to maintaining a contestable and innovative digital economy.[37]

3. *The theoretical foundations of harm*

Traditional theories of harm, including but not limited to, the theories of price effects, output effects and quality effects have long been employed to assess the potential negative consequences of mergers on market competition. These theories, grounded in economic analysis, focus on the examination of how a merger might distort competition by reducing the incentives for firms to operate efficiently, increasing market power or leading to adverse effects on consumers through higher prices, reduced innovation or decreased product quality.[38] The applicability and scope of these traditional theories have been extensively debated, particularly in light of the rapidly evolving dynamics of the digital ecosystem.[39]

3.1. *The limitations of traditional theories of harm in the digital reality*

Traditional theories of harm have historically been categorised into three principal strands: horizontal non-coordinated effects, vertical non-coordinated effects and conglomerate non-coordinated effects.

Horizontal theories focus on the loss of actual or potential competition between direct rivals, typically by assessing changes in market shares, pricing incentives and the potential for innovation to be curtailed.[40] Vertical theories, in turn, examine the foreclosure risks arising from the integration of firms

[37] *Digital Competition Regulations Around the World*, International Center for Law & Economics, available here.
[38] Commission, HMG, 2004, OJ C31/5, available here.
[39] N. PETIT, *Big Tech and the Digital Economy: The Moligopoly Scenario*, 2020, Chapter 5.
[40] OECD, *Glossary of Organisation Economics and Competition Law*, 1995.

operating at different levels of the supply chain, such as input or customer foreclosure.[41] Conglomerate theories, although historically less frequently applied, address the leveraging of market power across distinct but related markets, where the merger may foreclose competitors by bundling or tying complementary services.[42]

These frameworks are well-suited to traditional industries, where market boundaries were relatively stable, competitive dynamics are driven by price and output and concentration could be meaningfully inferred from static market shares.[43] However, digital markets depart significantly from these assumptions. They are characterised by multi-sided platforms, zero-price services, rapid innovation cycles and strong network effects that lead to market tipping.[44] The classical reliance on market share thresholds or price-based indicators often fails to capture the competitive significance of firms in such environments, particularly where the target is a nascent competitor with little current revenue but substantial potential to disrupt incumbents' ecosystems.[45]

As further explained in section 3.2 below, this enforcement gap has been partially addressed by Article 14 of the Digital Markets Act ("DMA"),[46] which imposes on designated gatekeepers[47] an obligation to notify the Commission of all intended concentrations – regardless of whether they meet the thresholds of the EUMR or national merger control regimes – where the target provides core platform services, other digital sector services or enables the collection of data. The rationale is precisely that, under traditional turnover-based criteria, many acquisitions by large digital platforms would not only escape scrutiny on the merits but would not reach the Commission or national competition

[41] Commission, *Guidelines on the assessment of non-horizontal mergers under the Council Regulation on the control of concentrations between undertakings*, 2008, C 265/07, paras 11 and 14, available here.
[42] *E.g.*, Y. LIM, *Tech Wars: Return of the Conglomerate – Throwback or Dawn of a New Series for Competition in the Digital Era?,* Journal of Korean Law, Vol. 19, 2020, pp. 47-62.
[43] Commission, HMG, 2004, OJ C31/5.
[44] J. FURMAN et al., *Unlocking digital competition: Report of the Digital Competition Expert Panel, HM Treasury,* 2019, pp. 4, 64 and 102, available here.
[45] N. PETIT, *Big Tech and the Digital Economy: The Moligopoly Scenario*, 2020, Chapter 5.
[46] Regulation (EU) 2022/1925 of the European parliament and of the Council, of 14 September 2022, on contestable and fair markets in the digital sector (Digital Markets Act), Article 14, available here.
[47] In September 2023 the Commission designated for the first time six gatekeepers: Alphabet, Amazon, Apple, ByteDance, Meta, Microsoft. The following year, it designated as a gatekeeper, under the DMA, Apple with respect to its iPadOS, its operating system for tablets, and, in May 2024, Booking for its online intermediation service Booking.com. Ultimately, in April 2025, Meta was undesignated for its online intermediation service Facebook Marketplace. In total, as of May 2026, 23 core platform services provided by those gatekeepers are currently designated. For more information, *see* the Commission's website, available here.

authorities at all. Article 14 DMA thus operates as a transparency mechanism, complementing the Article 22 EUMR referral procedure and enabling authorities to monitor and, where appropriate, investigate transactions that would otherwise remain invisible.

Nonetheless, horizontal theories of harm have struggled to address acquisitions of startups whose competitive relevance lies not in their present market share, but in their potential to innovate or challenge dominant ecosystems in the future.[48] As a matter of fact, potential horizontal non coordinated effects have been applied in, at least, 11 out of the 16 so-called Big Five merger cases by the Commission.[49]

In the digital sector, horizontal theories of harm address traditional concerns related to the reduction of actual competition, particularly with respect to potential price increases. However, given the dynamic and rapidly evolving nature of digital markets,[50] horizontal theories of harm have been applied focusing on harms to potential competition and on the competitive implications of combining datasets, both of which are discussed further below. Ex-post assessments, particularly within the European Union, suggest that horizontal concerns have not been the primary focus of merger evaluations, which have instead predominantly examined transactions involving complementary products and services. Where horizontal effects have been considered, they have largely arisen in cases involving the combination of datasets.

The phenomenon of "killer acquisitions" epitomises this gap: incumbents acquire innovative entrants not to integrate their products into a competitive market, but to suppress or delay their development, thereby protecting the incumbent's core business. [51]

The horizontal theories of harm identified encompass several interrelated, but distinct, dimensions: the loss of actual competition, the loss of potential

[48] OECD, *Theories of Harm for Digital Mergers – Background Note*, 28 April 2023, available here.

[49] Commission, Cases No. M.4731 – *Google/DoubleClick*; No. M.5727 – *Microsoft/Yahoo! Search Business*; No. M.6281 – *Microsoft/Skype*; No. M.7047 – *Microsoft/Nokia*; No. M.7217 – *Facebook/WhatsApp*; No. M.7290 – *Apple/Beats*; No. M.8124 – *Microsoft/LinkedIn*; No. M.8788 – *Apple/Shazam*; No. M.8994 – *Microsoft/GitHub*; No. M.9660 – *Google/Fitbit*; No. M.10262 – *Meta* (formerly Facebook)/*Kustomer*. In four cases, the Commission identified overlaps between the parties but nevertheless concluded that the mergers did not result in any horizontally affected markets, primarily because of the parties' low market shares, *see* Cases No. COMP/M.6381 – *Google/Motorola Mobility,* para. 14; No. M.10001 – *Microsoft/ZeniMax*, para. 58; No. M.10290 – *Microsoft/Nuance*, paras 101-102, 111, 117, and 123; No. M.10349 – *Amazon/MGM*, paras 144-146.

[50] *Ibidem.*

[51] *See* OECD, *Start-ups, Killer Acquisitions and Merger Control*, 2020, available here.

competition, the reduction of innovation and the combination of the merging parties' data collections and capabilities. The loss of actual competition represents the classical form of horizontal harm and is concerned with the immediate elimination of rivalry between two firms active in the same relevant market.[52] In such scenarios, the merger directly reduces the number of independent operators, thereby increasing market concentration and creating conditions conducive to unilateral or coordinated effects, including higher prices, reduced output or degraded quality.[53]

The loss of potential competition, by contrast, addresses situations where one of the merging firms is not yet a significant market player, but exerts a constraining influence through its credible threat of future market entry or expansion. This theory of harm has gained salience in digital markets, where acquisitions of start-ups or innovative challengers may suppress emerging competitive dynamics that would otherwise disrupt entrenched positions.[54] Here, the harm lies in the prevention of a future source of rivalry that could have fostered greater consumer choice or technological advancement.

The reduction of innovation reflects the recognition that in many digital and high-technology markets, competition takes place not solely on price, but on innovation parameters, including product development, features and technological breakthroughs.[55] A horizontal merger between close competitors may reduce incentives to innovate by eliminating the race to develop improved offerings, thereby slowing the pace of innovation to the detriment of consumers.

Lastly, the combination of the merging parties' data collections and capabilities constitutes an increasingly important strand of horizontal analysis in the digital economy. Data is a critical input that underpins competitive

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[52] M. FRYKMAN KRANS, *Examining the Competitive Effects of Digital Ecosystem Mergers: An Analysis of Theories of Harm Applied in Assessments of Digital Ecosystem Mergers under EU Merger Control*, Uppsala University, Faculty of Law, 2023, available here.

[53] *See* Commission, Cases No. M.6281 – *Microsoft/Skype*, para. 78; No. M.7217 – *Facebook/WhatsApp*, para. 99. *See also Cisco Systems and Messagenet v. Commission*, T-79/12, para. 69 and Commission Case No. /M.5727 – *Microsoft/Yahoo! Search Business*, paras 119 and 124.

[54] Commission, Cases No. M.4731 – *Google/DoubleClick*; No. M.7290 – *Apple/Beats*; No. M.9660 –*Google/Fitbit*. In Case No. M.7217 – *Facebook/WhatsApp*, the question of whether WhatsApp was a potential competitor in the market for social networking services was raised. However, the Commission made its assessment based on the assumption that the parties were actual competitors and found no competitive concerns.

[55] M. FRYKMAN KRANS, *Examining the Competitive Effects of Digital Ecosystem Mergers: An Analysis of Theories of Harm Applied in Assessments of Digital Ecosystem Mergers under EU Merger Control*, Uppsala University, Faculty of Law, 2023, available here.

advantage in many platform-based markets and the aggregation of unique datasets may enhance the merged entity's market power in ways that are difficult for rivals to replicate.[56] Such combinations may reinforce network effects, increase switching costs and foreclose opportunities for competitors reliant on access to comparable datasets.[57]

Vertical and conglomerate theories face analogous shortcomings. The vertical theories of harm traditionally examined in merger control are primarily concerned with foreclosure effects – namely, input foreclosure and customer foreclosure – which arise when a transaction combines firms operating at different levels of the supply chain.[58] The underlying concern is that vertical integration may alter the merged entity's incentives and ability to restrict access to essential inputs or downstream customers in ways that impede effective competition.[59]

Input foreclosure, for example, presupposes a clear understanding of essential inputs and their availability to downstream rivals. Yet, in the digital economy, the most critical input is often data, a non-rivalrous, replicable and context-dependent asset that does not fit neatly into traditional foreclosure models.[60] While the *Microsoft/LinkedIn*[61] decision acknowledged the

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[56] International Competition Network, *Draft report on the control of data, market power, and potential competition in merger reviews*, April 2024, p. 54, available here.

[57] In Commission, Case No. M.4731 – *Google/DoubleClick*, the combination of the parties' customer-provided data on internet users' behavior was assessed as a non-horizontal concern, reflecting the nature of the relationship between the firms. The Commission did not clearly specify whether the relationship was vertical or conglomerate, and the assessment did not focus on either input or customer foreclosure, nor on a leveraging strategy. Instead, the analysis more closely resembled that set out in the HMG, para. 36. For these reasons and given that the assessment did not contain elements of particular relevance for the purposes of this paper, it suffices to note that the merged entity was found to be contractually restricted from using the data to improve its online advertising services, and that competing firms had access to equivalent data.

[58] M. FRYKMAN KRANS, *Examining the Competitive Effects of Digital Ecosystem Mergers: An Analysis of Theories of Harm Applied in Assessments of Digital Ecosystem Mergers under EU Merger Control*, Uppsala University, Faculty of Law, 2023, available here.

[59] *E.g.*, Commission, Cases No. M.7047 – *Microsoft/Nokia*, paras 102-104, 116-122 and 136-143, as regards lack of market power and unprofitability; No. M.7290 – *Apple/Beats*, paras 33 and 44, as regards lack of market power; No. M.6381 – *Google/Motorola Mobility*, paras 92-94, as regards unprofitability.

[60] M. FRYKMAN KRANS, *Examining the Competitive Effects of Digital Ecosystem Mergers: An Analysis of Theories of Harm Applied in Assessments of Digital Ecosystem Mergers under EU Merger Control*, Uppsala University, Faculty of Law, 2023, available here.

[61] Commission, Case No. M.8124 – *Microsoft/LinkedIn*, paras 247, 257, and 264. The Commission likewise examined, albeit more briefly, the potential risk of foreclosure affecting providers of productivity software, but ultimately reached the same conclusion, namely that LinkedIn data could not be regarded as a significant input for machine-learning applications in productivity software, *see* paras 373-380.

potential harm of data aggregation, the Commission's analysis remained tethered to the presence or absence of existing competition in online advertising, thereby underestimating the broader ecosystem implications of combining professional and social data streams.

Customer foreclosure, on the other hand, arises where a vertically integrated firm restricts upstream rivals' access to a significant customer base, diverting demand to its own downstream operations and, thereby, weakening the competitive position of alternative suppliers. In the context of digital platforms, this often manifests through preferential ranking, self-preferencing or the bundling of services that channel user traffic toward the platform's own services at the expense of third-party providers.[62] The harm results not only from the reduction of demand for rivals, but also from the reinforcement of network effects within the merged entity's ecosystem which can make entry or expansion by alternative providers' more difficult over time.

Vertical theories of harm in digital reality must, therefore, grapple with the particularities of platform business models where multi-sided interactions, data dependencies and gatekeeping positions amplify the competitive significance of both input and customer foreclosure. For example, a platform that controls a dominant search or app distribution channel may, after acquiring a complementary service, favour its own offering by restricting data sharing or by altering default settings, conduct that would not necessarily involve a complete denial of access but may nonetheless produce exclusionary outcomes.

Conglomerate effects, historically viewed with scepticism due to their speculative nature, acquire renewed significance in ecosystems where cross-market leveraging is the norm.[63] Digital platforms frequently operate across a constellation of markets – search, advertising, cloud services, payments, travel and beyond – and their ability to bundle or integrate services creates competitive advantages that extend far beyond individual markets. The traditional reluctance to intervene on conglomerate grounds risks overlooking these subtle yet powerful mechanisms of entrenchment.

The limitations of traditional theories, thus, stem from their focus on discrete markets, static indicators and tangible price effects. Digital ecosystems,

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[62] *See* Commission, Case No. M.6381 – *Google/Motorola Mobility*, para. 94. The Commission also found that an input foreclosure strategy would be unlikely to significantly affect competition, as it would not cover a large enough portion of the downstream market, *see* paras 95-98.

[63] *E.g.,* Y. LIM, *Tech Wars: Return of the Conglomerate – Throwback or Dawn of a New Series for Competition in the Digital Era?,* in *Journal of Korean Law*, Vol. 19, 2020, pp. 47-62.

by contrast, thrive on interdependencies, dynamic user engagement and long-term strategic positioning. They challenge the very notion of what constitutes "the market" for the purposes of merger assessment and expose the inadequacy of frameworks that fail to account for cross-market feedback loops, user lock-in and the cumulative power of data-driven integration.[64]

3.2. *The "new" Ecosystem theory of harm*

In response to these shortcomings, a new conceptual lens is emerging: the *ecosystem* theory of harm.[65] This theory departs from the traditional compartmentalised approach by considering the ecosystem as the relevant unit of analysis. A digital ecosystem comprises a portfolio of interconnected products and services that reinforce each other through technological integration, data sharing and user lock-in. It is not merely a conglomeration of markets, but a self-reinforcing network where dominance in one segment can be leveraged to strengthen or protect positions in others.[66]

The Ecosystem theory of harm recognises that competitive harm may arise not only from the elimination of direct rivals, but from the foreclosure of opportunities for competition across the ecosystem.[67] For instance, an acquisition may enable a platform to strengthen its gatekeeping position by integrating a new service that increases switching costs, expands data collection or creates dependencies that rival services cannot easily replicate. The theory also captures the risk of exclusionary expansion: a dominant platform may use its ecosystem to enter adjacent markets under more favourable conditions than standalone competitors, thereby foreclosing future competition before it materialises.[68]

Recent legislative developments, such as the DMA[69] and the German Section 19a GWB,[70] have laid the groundwork for incorporating ecosystem

[64] V. H.S.E. ROBERTSON, *Digital merger control: adapting theories of harm*, 2024, p. 23.
[65] In this regard, see *ex multis* C. CAFFARA, M. ELLIOT and A. GALEOTTI, *'Ecosystem' theories of harm in digital mergers: new insights from network economics*, part 1, 2023.
[66] OECD, *Theories of harm for Digital Mergers: OECD competition policy roundtable background note*, 2023, available here.
[67] *Ibidem.*
[68] A. GRONHOLM, *EU Competition Policy Objectives in Digital Markets*, Helsinky University, 2022, available here.
[69] Regulation (EU) 2022/1925 of the European parliament and of the Council, of 14 September 2022, on contestable and fair markets in the digital sector (Digital Markets Act), available here.
[70] *See* for an official translation of the law: "*Federal Office of Justice Competition Act (Gesetz gegen Wettbewerbsbeschränkungen)*", available here. *See* also J. DEN BOOM, *Regulating competition in the digital network industry*, Tilburg University, 2023.

logic into enforcement. The DMA explicitly targets gatekeepers that control core platform services, requiring them to maintain interoperability, refrain from self-preferencing and ensure fair access to data. Section 19a GWB empowers the *Bundeskartellamt* to intervene against undertakings of "paramount significance" for competition across markets, even in the absence of traditional dominance in a specific market.[71] These instruments reflect a growing recognition that ecosystems, rather than isolated markets, constitute the relevant competitive arena in the digital age.

However, the operationalisation of the Ecosystem theory of harm remains fraught with challenges. Chief among them is the evidentiary standard: proving that an acquisition will harm competition across an ecosystem often involves predictive assessments of innovation, user behaviour and technological evolution, factors inherently subject to uncertainty. This raises questions about the balance between precautionary intervention and the risk of over-enforcement that could deter beneficial innovation or integration. Moreover, the boundaries of an ecosystem are themselves fluid and contestable: should they be defined narrowly around core services or broadly to include complementary and potential future markets? The answers to these questions might inevitably contribute to shape the future trajectory of merger control.

3.3. *Booking/Etraveli: a milestone in ecosystem concerns*

The Commission's decision in *Booking/Etraveli*[72] represents a noteworthy development in the crystallisation of ecosystem-based merger analysis. Unlike the paradigmatic cases involving big tech gatekeepers, this merger concerned the travel services sector, a field traditionally seen as adjacent, rather than central to the platform economy. Booking.com, already a dominant player in online travel agency (OTA) services, sought to acquire Etraveli, a flight booking platform. Although the transaction initially presented limited horizontal overlap, with the parties operating in related, but distinct, segments, the Commission's scrutiny appeared to extend beyond immediate market shares, potentially adopting a framework that considers the broader travel ecosystem in which Booking was actively engaged. This approach could

[71] BUNDESKARTELLAMT, *Annual Report 2021/22,* Bonn, 2022, p. 35, available here.
[72] *See* Commission, Case No. M.10615 - *Booking Holdings/Etraveli Group*, recital 4 and ME/6991/22 - Anticipated acquisition by Booking Holdings Inc. of certain activities of eTraveli Group AB, 29 September 2022.

suggest an evolving perspective on competitive dynamics, moving towards a more comprehensive assessment of market structures.[73]

The decision identified several ecosystem-related concerns.[74] First, the integration of Etraveli's flight services into Booking's platform would have enabled the latter to consolidate its role as a gatekeeper for the entire travel journey, from flights to accommodations to ancillary services. By controlling a broader swath of the user's travel planning interface, Booking could have increased switching costs and entrenched its dominance through data accumulation and cross-service self-preferencing. Second, the acquisition threatened to foreclose rivals' access to a critical channel for customer acquisition: flight bookings often serve as the first point of contact in a travel itinerary, creating valuable cross-selling opportunities for hotels, car rentals and experiences.[75]

The Commission's decision to block the merger marked a departure from earlier cases where such conglomerate or ecosystem effects were acknowledged, but not deemed decisive.[76] This outcome might suggest a willingness to intervene even in the absence of traditional price-based harm or direct horizontal overlaps, based on the potential risk of ecosystem foreclosure. Significantly, this approach could be seen as extending the nascent ecosystem theory beyond the domain typically associated with particularly large and established digital technology firms, thereby hinting that platforms of more moderate scale, operating within specific sectorial ecosystems, may also warrant consideration regarding their systemic competitive implications.

From a doctrinal perspective, *Booking/Etraveli* exemplifies the practical application of the Ecosystem theory of harm. It shows how competition authorities can move beyond narrow market definitions to assess the cumulative impact of mergers on user journeys, data flows and platform gatekeeping. It also raises critical questions: how far should merger control go in policing cross-market integration? What benchmarks should guide the assessment of "ecosystem dominance"? And how can authorities ensure that their interventions remain proportionate and predictable?

The implications of this case are twofold. First, it could be argued that ecosystem analysis is moving beyond an experimental phase, potentially

[73] See Commission, Case No. M.10615 - *Booking Holdings/Etraveli Group*, recitals 2-5, 50 and 117.

[74] *See* also C. BERGQVIST, E. FAUSTINELLI, *Multi-sided platforms – Legal implications of definitional gaps*, available here.

[75] *Ibidem.*

[76] Commission, Cases No. M. 10262 - *META (FORMERLY FACEBOOK)/ KUSTOMER* and No. M.10920 - *Amazon/iRobot.*

emerging as a significant consideration in the Commission's assessment, which might, in turn, come to shape future cases involving platform expansion in adjacent markets. Second, it might be seen as indicating a growing interplay between merger control and ex-ante regulation, notably under the DMA, which is designed to curb gatekeeping dynamics that ecosystem mergers have the potential to exacerbate.

4. *Conclusive remarks*

The exploration of harm theories in the context of digital mergers reveals a legal and economic landscape in transition. For decades, EU merger control has been anchored in well-established theories of harm (horizontal, vertical, and conglomerate), each designed to address specific forms of competitive distortion. These frameworks have ensured legal certainty and analytical coherence; yet their foundations were conceived for markets where competition was primarily price-driven, market boundaries were clearly defined, and the competitive process was largely linear.

Digitalisation has unsettled this paradigm. As shown in the preceding analysis, the hallmarks of digital markets – strong network effects, rapid innovation cycles, data accumulation and multi-sided platform dynamics[77] - challenge the predictive capacity of traditional tools. Horizontal theories struggle to assess the loss of potential competition where market shares are poor proxies for competitive significance. Vertical theories falter when the "input" at stake is not a physical good, but a dataset whose value is context-dependent and whose control can shape adjacent markets in unforeseeable ways. Conglomerate theories, long regarded with scepticism, are often dismissed as speculative, even where cross-market leverage constitutes a central mechanism of dominance.[78]

The emergence of the *ecosystem* theory of harm might be viewed as a recalibration of merger control to match the realities of digital competition. By recognising the ecosystem as a self-reinforcing structure of interdependent products and services, this theory can allow competition authorities to examine mergers through a broader lens: one that accounts for user lock-in, data-driven feedback loops and the strategic expansion of platforms into adjacent markets.

[77] *See* Section 2 on the *Anatomy of digital markets*.
[78] *See* Sub-Section 3.1 on *the limitations of traditional theories of harm in the digital reality*.

It shifts the focus from static overlaps to dynamic entrenchment, from immediate price effects to long-term structural risks.[79]

Nevertheless, the adoption of this theory is not without challenges. Defining the boundaries of an ecosystem, establishing causality between a merger and potential foreclosure effects and balancing intervention against the need to preserve incentives for innovation are complex tasks. Over-enforcement risks chilling legitimate growth strategies, while under-enforcement risks cementing gatekeepers whose dominance extends far beyond traditional market contours.

The *Booking/Etraveli* decision seems to stand, at the moment, as a milestone in this ongoing evolution. By blocking a merger based on its potential to entrench an ecosystem rather than on classical horizontal or vertical grounds, the Commission signalled a more proactive and forward-looking approach to merger control.[80] It demonstrated that ecosystem harm is not confined to the realm of the main big tech companies, but can arise wherever platforms orchestrate user journeys and control key access points to complementary services.

Going forward, the challenge for EU merger law will be to integrate ecosystem analysis into a coherent, predictable and proportionate enforcement framework. The interplay between ex ante regulation – particularly the DMA and national equivalents such as Section 19a GWB – and ex post merger control will be decisive. Together, these instruments must ensure that digital markets remain contestable, that innovation is not stifled by premature consolidation and that consumers retain genuine choice in an increasingly interconnected economic environment.

Against this backdrop, the re-evaluation of theories of harm is not a mere academic refinement, rather a potential avenue for regulatory advancements. The future of competition in digital ecosystems will depend on the ability of law to adapt its analytical tools to a reality where value is created not in isolation but across networks, platforms and data-driven constellations. The Ecosystem theory of harm, while still in its formative stage, indicates one of the possible pathways toward this adaptation which balances the preservation of competitive structures with the dynamic nature of digital innovation.

Yet, in this context, the balancing of interests underlying the expansion of competition enforcement – also through the notion of ecosystems – takes place within the well-known context in which the Union applies its rules to firms

[79] *See* Sub-Section 3.2 on *the "new" Ecosystem theory of harm*
[80] *See* Sub-Section 3.3 on *Booking/Etraveli*: *a milestone in ecosystem concerns.*

that are, in the vast majority of cases, headquartered in third countries (notably the United States). This, in turn, raises, on one hand, the question of how such developments fit within the current geopolitical and economic landscape and, on the other, the risk that an increasingly interventionist regulatory approach may "stifle" the development of EU-based undertakings, thereby leaving the Union in the position of an importer of digital services and an exporter of regulation.

ABSTRACT (ita)

Il contributo analizza l'efficacia delle teorie del danno tradizionali nella valutazione delle operazioni di concentrazione digitali ai sensi del diritto della concorrenza dell'UE. Nel contesto dei mercati digitali, caratterizzati da pronunciati effetti di rete, vantaggi derivanti dai dati e piattaforme *multisided*, – il contributo illustra, in primo luogo, alcune difficoltà degli strumenti tradizionali di *enforcement*, dando conto, a tal proposito, della nascente teoria del danno basata sull'ecosistema, con un'analisi della decisione *Booking/Etraveli* come esemplare della sua applicazione pratica. In ultima analisi, il contributo sostiene che la revisione delle tali teorie tradizionali può rappresentare un'opportunità regolamentare strategica per adattare il controllo delle concentrazioni alla continua evoluzione dell'architettura degli ecosistemi digitali, pur trattandosi di un complesso esercizio di equilibrio da raggiungere.

ABSTRACT (eng)

The contribution analyses the effectiveness of traditional theories of harm in assessing digital mergers under EU competition law. In the context of digital markets, characterised by strong network effects, data-driven advantages and multi-sided platforms, the contribution first illustrates some of the limitations of traditional enforcement tools, with particular reference to the emerging ecosystem theory of harm, through an analysis of the *Booking/Etraveli* decision as a notable example of its practical application. Ultimately, the contribution argues that revisiting these traditional theories of harm may represent a strategic regulatory opportunity to adapt merger control to the continuous evolution of digital ecosystem architectures, while acknowledging the complexity of striking an appropriate balance.