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Merger control in the digital sector

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Introduction

Mergers in digital markets have been a highly debated topic in recent years, following growing concerns around the acquisition strategies of major tech platforms and the evolving role of digital ecosystems. For the purpose of this paper, digital mergers involve those sectors and companies whose main activities are "the development and deployment of digital technologies on B-2-B and B-2-C markets, as opposed to companies selling primarily other services and being merely supported by digital technologies" (Klotz, 2020), while digital ecosystems are defined "lines of products and services linked through shared functionalities, which provide benefits to the consumers when used together" (OECD, 2020), generally owned by large digital platforms.

Estimating the exact number of digital mergers to date is not an easy task. Some have estimated that between 1987 and 2020 GAFAM companies[1] made 825 acquisitions (Parker, Petropoulos and Van Alstyne, 2021). The number of transactions has since been growing, with Alphabet, Microsoft and Amazon making more acquisitions in 2021 than in any other year.[2] Notably, (Kwoka and Valletti, 2020) report that approximately 97% of these mergers and acquisitions have not been assessed by any competition authority worldwide. Further, almost all the reviewed mergers to date have been cleared, with or without remedies (to date), only two GAFAM mergers have been blocked, (Thun, 2023). Some experts now suggest that, in hindsight, certain transactions should have been blocked.

These numbers, together with concerns around large platforms' growing market power, have led to an active debate around perceived underenforcement, the reasons for it, and the consequential need to address it. The first matter that a number of jurisdictions have tried to address is the limitations of notification thresholds, as many digital mergers have fallen below thresholds and thus avoided authorities' scrutiny altogether.

A second issue to consider is the substantive assessment of those transactions that are in fact captured under notification regimes, in order to understand if the high clearance rate of digital mergers, accompanied by significant increases in market power, reflects a genuine absence of competition issues in such transactions or problems with their assessment. Three main aspects are relevant here: the development of the theory of harm, the substantive legal test, and the standard of proof. Another factor at play is remedies and the question of whether those that have been implemented in digital mergers so far have been effective in countering identified competition concerns.

This paper focuses on analysing the theories of harm used to date in the substantive assessment of digital mergers, through a mapping exercise. In particular, it examines non-

1. Google (Alphabet), Apple, Facebook (Meta Platforms), Amazon and Microsoft.
2. https://www.cnbc.com/2022/01/22/amazon-microsoft-alphabet-set-more-deals-in-2021-than-last-10-years.html.

coordinated effects theories of harm, which are the most commonly considered in these mergers,[3] in order to understand how novel features and dynamics of digital markets have been taken into account. The mapping includes both traditional theories and more novel theories, such as ecosystem-specific or data-related ones, that may not neatly fit the standard classification of theories of harm according to their horizontal, vertical and conglomerate effects.

The remainder of the paper is structured as follows: section 1 starts with a brief overview of the main features and dynamics of digital markets and how these can affect the assessment of mergers. Section 2 maps out traditional theories of harm applied in digital mergers, with the support of recent cases,[4] while section 3 analyses the more novel theories proposed in the literature and their first practical applications. Section 4 discusses the suitability of current theories and the potential need for new ones, if anticompetitive transactions are to be captured under the existing frameworks for merger review. Section 5 concludes highlighting areas for future work.

The paper finds that competition authorities have largely relied on traditional theories of harm when assessing digital mergers, which they have adapted to differing extents to account for the unique features of digital markets. Some newer theories have started to work their way into merger control practice, but it remains to be seen whether this will result in increased intervention by authorities. The paper acknowledges that there are other constraints on authorities taking a more interventionist approach, such as the potential for greater difficulty in meeting legal thresholds given the inherent uncertainty of these markets. However, it concludes that there is scope for and utility in competition authorities going further in terms of adapting theories of harm in digital merger assessments, as well as exploring more novel theories, which may require them to test the limits of existing legal frameworks.

1. The nature of digital mergers

In the past decade, a number of platform firms and their digital ecosystems have increasingly gained market dominance at the global level, across various markets, attracting close scrutiny both from regulators and academics. In particular, Big Tech's merger activity has spurred the debate around the potential for harm from these transactions, and the possible need to rethink certain elements of merger policy for digital markets.

3. Certain characteristics of digital markets, such as the use of a common infrastructure in ecosystems and the existence of structural links between ecosystems' actors, might facilitate coordination (Zingales and Renzetti, 2022). However, to date, coordinated effects theories of harm have not commonly been considered.
4. The paper outlines particular examples of theories of harm considered by certain authorities. The cases may have also been reviewed by other authorities with the reasoning behind the theories of harm either not relevant for the specific section or not accessible.

1.1 Characteristics of digital markets

Certain key features of digital industries, extensively analysed in the literature, significantly affect the dynamics of these markets and how firms compete. Notably, these characteristics can facilitate the rise and strengthening of ecosystems and the often unpredictable evolution of new business models. It is therefore important to understand these characteristics, in order to comprehensively assess digital mergers and their potential outcomes.

Digital markets are often multi-sided and exhibit network effects, generally defined as "the gains enjoyed by consumers of a product when more consumers use that product" (OECD, 2022). Bringing together different groups of consumers via a platform, these markets' specific multi-sided dynamics often rely on the interaction between two or more different sides of the market and their users, for instance platform users and advertisers (OECD, 2018).

The interaction between different sides of the market is at the core of the platforms' value creation, further enhanced by both direct and indirect network effects. Indeed, not only does one side of the market derive added value from interacting with the other side, but this value is also increased by the participation of other users in the platform (OECD, 2020). Platforms can reinforce their market power and create barriers to entry by strengthening and expanding such network effects.

The importance of network effects dynamics is further enhanced by Big Data, commonly understood as the use of large-scale computing power and technologically advanced software, in order to collect, process, and analyse data characterised by a large volume, velocity, variety and value (OECD, 2022). In digital markets, data has a key role both as an asset and as an input for the platforms' algorithmic systems, creating value for the platform and becoming a critical source of market power (OECD, 2016). Two mechanisms are particularly relevant.

First, data feedback loops, enabled by artificial intelligence (AI) technologies and machine learning, reinforce the value platforms can create through their data. Digital platforms' large datasets confer on them a significant informational advantage, allowing platforms to improve the performance of AI algorithms to gain better insight into their user base and thus improve the quality of both their services to users and the accuracy of their targeted advertising. This in turn attracts more users on one side of the market, and additional funds from advertisement on the other side of the market.

Secondly, network effects amplify the positive effects of these feedback loops. Attracting more users on one side of the market in turn increases the attractiveness of the platform for other users on either side of the market, thus feeding into and reinforcing the feedback loop (OECD, 2020). The magnitude of these effects also depends on whether users are single-homing or multi-homing, as well as the degree of platform differentiation and level of interoperability between platforms' services (OECD, 2020).

The collection and aggregation of data can also lead to data-driven economies of scope. Firms that are able to obtain large amounts of data, and aggregate and analyse multiple complementary datasets, can generate more economic value compared to what can be obtained by analysing separate datasets, thanks to machine learning's better insights and the reduced costs of applying data analytics to a merged set of data (Martens, 2020).

Finally, the multi-sided nature of digital markets has allowed the rise of business models centred around the provision of products and services at zero price, at least to one side of the market (generally the consumer-facing side). As explained in (OECD, 2019), zero-price markets often disguise a price of a non-monetary nature, representing the real motivation, such as data acquisition, attracting consumers' attention for advertising purposes, developing a consumer base, or other long-term objectives.

The absence of sales revenues and value-based market shares creates a need for new metrics to measure market power. Moreover, in zero-price markets, consumer harm cannot be assessed in terms of price increases. Identifying the key parameters on which firms compete and assessing consumer harm in terms of multifaceted factors such as quality degradation, becomes more significant. Lastly, the role of data as a new type of "currency", in markets where consumers are often seen as paying with their data, can lead to additional difficulties in terms of if, and how, to take into account the degree of privacy granted by the platform as a parameter of competition (Ocello and Sjodin, 2018).

The combination of these factors, together with substantial economies of scale, generates competition for-the-market dynamics, making digital markets particularly prone to "tipping". In the short term, there is scope for hotly contested competition as firms battle to be the beneficiaries of network effects and economies of scope and scale, which can lead to benefits for consumers. However, once a firm emerges as the market leader, these dynamics can accelerate their rise to dominance to the point where the market tips, from which point new entry becomes very difficult and future competitive constraints may be limited. In the presence of winner-takes-all/winner-takes-most dynamics, it is arguable that an incorrect clearance could be more costly than in more traditional markets.

1.2 The role of ecosystems

The combination of these key forces at play in digital markets, as well as the multi-market presence of digital platforms, allows them to offer product ecosystems. These "walled gardens", enabled and reinforced by the features highlighted in the previous section, have the potential to lock-in consumers and create insurmountable barriers to entry for potential rivals that cannot replicate the ecosystem's offerings. Indeed, the factors that drive the creation of ecosystems create a risk of tipping not only at the level of the individual platform market but also at the level of whole ecosystems of markets, as noted by (OECD, 2020).

The emergence of ecosystems and platform-based competition means that companies' strategic decisions are likely not being made at the level of individual product markets, but rather take into account a constellation of markets. In this context determining which companies are direct competitors could be challenging (Congressional Research Service, 2021).

This also means that the effects of a merger may spread from the specific markets as the focus of the merger to even distantly related markets, connected via the ecosystem, and affect competition there. This effect is further exacerbated by the nature of digital markets, whereby complementary services often rely on being able to interoperate with other services that are often owned and operated by a competitor. Moreover, the role of data aggregation creates a further cross-ecosystem effect, whereby the accumulation of additional data through a merger and its potential to be combined with existing datasets could benefit the incumbent at many points within their ecosystem (including potentially for not-yet-discovered purposes, Hoffmann and Johannsen, 2019), again, beyond the markets the focus of the merger.

Finally, as highlighted in (Jacobides, Cennamo and Gawer, 2018), "behaviour in ecosystems, and ultimately, its success, is affected by the rules of engagement and the nature of standards and interfaces". The governance role of digital platforms within their ecosystems further blurs the traditional boundaries of economic value chains, leading to the coexistence and intersecting of vertical, conglomerate and horizontal effects considerations.

1.3 Implications for the competitive assessment

In terms of implications for the competitive assessment of transactions in markets with these characteristics, the zero-price nature of many digital products and services requires a new consideration of non-price parameters of competition in merger control (OECD, 2018) and potentially a broader use of quality-focused theories of harm. Indeed, one of the most common and straightforward theories of harm in merger analysis, the elimination of direct price competition between close competitors, may not be as relevant in these markets. Traditional price-centric analysis may thus encounter limitations, and overlook important non-price parameters, such as privacy and data security, use and prevalence of advertising content, innovation, ease of switching and consumer choice, that especially in digital markets may be at the core of the potential competitive harm (OECD, 2019).

Furthermore, concerns around the level of data aggregation and the value of platforms' large datasets are often central in digital mergers. In particular, the nature of such data, its variety and the level of substitutability, and possibly also its volume, are considerations that are key for determining competitive harm but which can be difficult to take into account under a conventional price-centric approach. For instance, (Stuart, 2021) remarks how the acquisition by Google of Nest Labs in 2014 may appear pro-competitive from a price perspective, but "when considered holistically" it might have enabled Google to acquire data

which allowed it to more easily maintain its dominance in other markets, e.g., targeted behavioural advertising, search engine services. This could also have had further detrimental effects on user privacy.[5]

Although defining, measuring, and incorporating quality dimensions in an effects-based analysis may be challenging (OECD, 2013), quality competition is crucial in data-driven multi-sided markets. Moreover, in these markets especially, the most harmful effects of mergers can often be non-price related, for example their impact on innovation, and of a dynamic nature (Stuart, 2021).

Considerations related to dynamic competition, long-term effects and efficiencies might be more important for understanding competition and competitive harm in digital markets than they have been in traditional ones. As observed in (OECD, 2020), "dynamic sectors are characterised by higher entry and exit rates, as well as continuous processes of innovation that systematically disrupt existing business models and create entirely new markets". (Petit and Teece, 2021) also note that in digital industries "products that are imperfect substitutes or complements compete against each other dynamically for user demand", and those dynamic constraints risk being overlooked by conventional methods. This is accompanied by a heightened level of uncertainty regarding future market developments as well as actual, and potential, competitive pressure.

The time frame currently used to assess future market developments in merger investigations could thus be limiting (Lear, 2019), not fully reflecting the dynamic competitive patterns and increasing the risk of both type I and type II errors. The risk of such errors is also perhaps even more acute in digital markets where factors such as network effects can create benefits for consumers, but also work to tip a market rapidly (Edwards-Warren, 2022). The importance of finding the most appropriate timeframe of analysis, able to capture dynamic effects of a merger beyond the very short term, is highlighted also in (OECD, 2020). It notes, however, that the question of the "ideal" timeframe is still open, in that "the assessment of far-reaching effects in the distant future also poses the risk of raising the subjectivity of merger enforcement and may lead to greater legal uncertainty".

Although not all digital markets share all of the above-mentioned features, the predominance of fast-moving multi-sided markets characterised by network effects and data accumulation, involving the provision of non-monetary-price products and services, where platforms have increasingly gained significant market power and expanded into far-reaching ecosystems, has brought into question some aspects of traditional merger control. Features and dynamics of digital markets have strong implications for the substantive assessment of such transactions, and in particular for the theories of harm usually put forward by competition authorities.

5. https://docs.house.gov/meetings/JU/JU05/20191018/110098/HHRG-116-JU05-20191018-SD007.pdf.

While digital mergers may be perceived as particularly challenging for a variety of reasons, ranging from notification thresholds to standards of proof and choice of remedies, the development of theories of harm able to capture the complexity of these markets is of paramount importance for the substantive assessment of mergers. The analysis of the design and use of theories of harm which follows, with the support of recent practice, is intended to serve as a stepping stone towards a better understanding of the challenges of merger control in this area and the way forward.

2. Traditional theories of harm in digital mergers

This chapter provides a mapping of the theories of harm that have been most commonly used in digital mergers. The focus is on non-coordinated effects theories since, to date, these have clearly been of most relevance in competition authorities' assessments of mergers in digital markets, as addressed in the introduction.

The section covers both more traditional theories, which have been adapted to the markets in question, and less established theories, such as those that are data-related, which might not have as yet be widely applied but are increasingly relevant for digital markets.

2.1 Horizontal theories of harm

Horizontal mergers involve mergers between direct competitors (OECD, 1995) and have historically been of the most concern to competition regulators. Horizontal mergers eliminate direct competition from a rival offering a substitute product or service, thus removing a competitive constraint from the market. The constraint may be an existing or a potential future competitor (CMA, 2021). By increasing the market power of the merged entity, this can give rise to anti-competitive unilateral effects resulting in price increases and/or impacts on other non-price parameters of competition such as a reductions in quality.

In the digital space, some horizontal theories of harm continue to focus on traditional concerns about harm to actual competition giving rise to price increases. However, given the rapidly evolving nature of digital markets, when compared to other industries it appears that horizontal theories more often centre around harm to potential competition or harm arising from the combination of datasets, both of which are discussed further below. Where ex-post analysis has been undertaken, namely in the EU, it appears horizontal concerns have not been at the forefront of the assessments, which have primarily considered mergers involving

complementary products and services.[6] Where horizonal effects were considered, it was mainly in cases involving the combination of datasets (Beaudouin and others, 2022).

2.1.1 Loss of actual competition

At the core of horizontal theories of harm involving firms with existing overlapping products is the ability of the merged firm to internalise the effects of customer switching between the merging parties' offerings, that would have otherwise acted as a competitive constraint. Competition authorities thus need to consider whether there will be sufficient remaining alternative sources of competition in the market to counter the prospect of unilateral effects arising.

In certain cases, competition authorities have applied standard horizontal theories of harm much as they would for mergers in traditional markets, without needing to engage heavily in an assessment of the unique characteristics of digital markets (at least in respect of the horizontal theories of harm considered). This has occurred in circumstances where the authority has assessed that the direct overlap between the parties' offerings is insignificant, or where the direct overlap is more significant but there are clearly sufficient remaining competitors in the market.[7]

For example, in the 2011 acquisition of Skype by Microsoft, the EC[8] determined that Skype competed directly with Microsoft's Windows Live Messenger service in the provision of consumer communication services (instant messaging, video and voice calls). However, it found that the merger did not give rise to competition concerns because even combined, the parties would not have a strong position in relation to any of these services due to currently low and/or declining market shares or the existence of multiple competitors. The Commission also considered whether there was overlap between Skype and Microsoft's Lync service in the provision of enterprise communication services, but concluded that the products did not compete directly as Lync was mainly used by large enterprises.[9]

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6. In her ex-post review of 69 digital and technology merger assessments by selected European Union members and the UK, (Robertson, 2022) found that 30 cases exclusively considered horizontal effects and a further 26 considered horizontal and vertical or conglomerate effects. However, the majority of the cases considered were technology mergers rather than digital mergers as defined for the purposes of this paper.
7. For example, the EC's assessment of the Microsoft/LinkedIn merger, which included horizonal theory of harm relating to the parties' existing overlap in the supply of online display advertising. The EC dismissed this concern relatively promptly given the parties' very low market shares.
8. EC decision, Microsoft/Skype merger. https://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=2_M_6281. This merger was also cleared by the Department of Justice and Australian Competition and Consumer Commission.
9. See also the ACCC's decision in Google/Madiant in 2022. https://www.accc.gov.au/public-registers/mergers-registers/public-informal-merger-reviews/google-llc-mandiant-inc. The ACCC assessed the parties' existing overlap in the supply of various cyber security services but determined that they were not close competitors because the primary service offered by Madiant, being incident response services, was not offered by Google.

In cases where the competitive dynamics were less clear-cut, the characteristics of digital markets have played a more prominent role in the assessment (box 1). This has included the role of network effects and how they can amplify the effect of the competitive constraint posed by the target.

Box 1. Consideration of digital market characteristics in horizontal mergers involving actual competition

In assessing the Z Holdings and LINE merger in 2020,[a] the Japan Fair Trade Commission (JFTC) considered the potential for horizontal effects to be heightened in the emerging code-based payment services market (that is, a two-sided market involving consumers and stores whereby payments are made by scanning a QR or barcode) due to certain digital market dynamics. Despite the low and declining market share of LINE's payment service, measured in terms of transaction amount, the authority determined that it should not be underestimated as a competitive constraint on Z Holdings due in part to its large and growing number of users on both sides of the market (the market as a whole was expanding), the significance of which was exacerbated by network effects. Further, the authority considered that given the market was still emerging and its competitive dynamics in a state of considerable flux, it was not able accurately forecast future developments, but it could not dispel the concern that the merged entity would have the potential to dominate the market. The JFTC was also concerned about the parties' use of exclusive dealing conditions in their agreements with member stores, and it ultimately cleared the merger subject to conditions, including that these provisions be removed.

The EC looked at the influence of network effects in its assessment of the Facebook/WhatsApp merger in 2013,[b] when analysing the existing horizonal overlap between the parties' consumer communications apps. While noting that these services are characterized by strong network effects, the EC found this was offset by evidence of significant consumer multi-homing, low switching costs, and low barriers to entry and expansion. The EC also determined that the degree of differentiation between Facebook Messenger and WhatsApp, including the use of different user identifiers, meant that they were not close competitors. Similarly, the EC found that the parties were not close (actual or potential) competitors in social networking services. These conclusions, which in hindsight may have understated the competitive tension between the two offerings, demonstrate the challenge in assessing closeness of existing competition in markets that are emerging and/or rapidly developing. Cremér, de Montjoye and Schewitzer (2019) point to Facebook/WhatsApp as an example of how, in mergers involving a broad ecosystem with differentiated services and only partial overlaps with the target, classification as a straightforward horizontal merger can fail to capture the core of the strategy driving it.

Source: Cremér, J., Y. de Montjoye and H. Schewitzer (2019). Competition Policy for the Digital Era.

[a] JFTC decision, Z Holdings/LINE. https://www.jftc.go.jp/en/pressreleases/yearly-2020/August/200804.html.

[b] EC decision, Facebook/WhatsApp. https://ec.europa.eu/competition/mergers/cases/decisions/m7217_20141003_20310_3962132_EN.pdf. This merger was also cleared by the FTC.

2.1.2 Loss of potential competition

As noted previously, horizontal unilateral effects concerns can also emerge with respect to potential competition that may have arisen between the parties in the future, absent the merger. As highlighted in (OECD, 2021), potential competitive constraints may "usefully be distinguished from a potential competitor or entrant who might already be imposing an existing competitive constraint on a firm's behaviour, despite itself not yet competing in that market".

In the context of digital platforms, this has often required competition authorities to make a projection about whether a smaller or nascent merging party, absent the merger, would have likely developed its service offering in a market where it is currently not active (or only active in a very limited way) so that it could compete against the acquirer. This encompasses theories of harm involving killer acquisitions, described in the section below, but also those cases where, despite the acquired product not being shut down, the elimination of the potential competitive constraint still gives rise to a risk of decreased innovation, increased prices or reduced quality.

For example, in the 2012 acquisition of Instagram by Facebook (as it was then known), the UK Office of Fair Trading (OFT) considered horizonal unilateral effects theories in respect of both the firms' existing overlap in the supply of photo sharing apps, as well as their potential future overlap in the supply of social networking services and online display advertising, where Facebook already had a strong market position. At the time, Instagram reportedly comprised only 13 employees and did not generate revenue.

In relation to the latter theory, the OFT determined that the main constraints on Facebook in respect of online display advertising (which is generally geared towards brand advertising, as opposed to transactional advertising) were sites that gathered user demographic and behavioural data which could be effectively used for this purpose, such as Google, Yahoo and Microsoft. Despite acknowledging Instagram's rapidly growing user base and submissions from third parties stating that it would not be difficult or expensive for Instagram to add some functionalities similar to Facebook's, the OFT concluded that Instagram was not particularly well placed to compete with Facebook in the short run and there were already other brands which were able to do so.[10]

The source of the potential competitive constraint can also come from the incumbent firm, rather than the target. This dynamic is at the core of reverse killer acquisitions strategies, discussed below. An example is the action commenced in 2022 by the Federal Trade Commission (FTC) against Meta in relation to its acquisition of Within Unlimited,[11] which developed a virtual reality fitness app called Supernatural. In seeking to block the merger,

10. OFT decision, Facebook/Instagram. https://www.gov.uk/cma-cases/facebook-instagram-inc. This merger was also cleared by the FTC.
11. Federal Trade Commission case summary, Meta Platforms/Within Unlimited. https://www.ftc.gov/legal-library/browse/cases-proceedings/221-0040-meta-platforms-incmark-zuckerbergwithin-unlimited-ftc-v.

the FTC argued that Meta was a potential entrant into the market for fitness virtual reality apps, including because it is already a prominent actor in the virtual reality sector, it has the resources and capabilities to launch a competing app and it had already considered doing so. Further, the FTC claimed that the mere threat of entry by Meta has influenced competition. However, the US District Court of Northern California rejected the FTC's application for a preliminary injunction to temporarily stop the completion of the deal and the FTC withdrew its substantive case as a result.

Mergers between potential competitors can also give rise to harms to dynamic competition if they remove incentives for an incumbent firm to expend effort to innovate and improve its competitive offering.[12] As such, dynamic competition, and theories of harm surrounding it, primarily focus on the firms' capabilities and innovation efforts (for example, Sidak and Teece, 2009). This was explored in the CMA's assessment of Facebook's already completed acquisition of Giphy (box 2). Given the importance of innovation to digital markets, it would not be surprising to see greater use of theories centred around harms to dynamic competition. As emphasised by the CMA when acknowledging the challenges Giphy faced with its monetisation strategies, uncertainty about future market developments does not necessarily preclude a finding of harm to dynamic competition as the dynamic process can have value in the present.

Box 2. Facebook/Giphy – harms to dynamic competition

In its assessment of Facebook/Giphy, finalised in 2022,[a] the CMA developed a horizontal theory of harm centred around Giphy's innovative online advertising service, which allowed companies to pay for GIF-based advertising, including by aligning popular GIF search terms with their branded GIFs. Giphy was already providing the service in the US and there was evidence that it intended to expand the service into the UK.

The CMA determined that Giphy's service was a potential competitor to Facebook's display advertising services in the UK, and its discontinuation by Facebook post-merger had thus led to a lessening of dynamic competition.

In reaching this conclusion, the CMA determined that Giphy's efforts to innovate and monetise its service were valuable as they increased the likelihood of new innovations and products being made in the future, even if its business model may not have ultimately been successful. It also noted the potential for network effects to assist Facebook's rivals using Giphy's advertising service, as well as the high barriers to entry which would become even more challenging if the two largest GIF providers were owned by Facebook and Google (which owns Tenor).

The CMA ultimately established that only a full divestiture of Giphy by Facebook could effectively remedy the competition concerns (which also included vertical foreclosure concerns) and this finding was largely upheld by the UK Competition Appeals Tribunal.[b] This can be contrasted with the assessment of the Austrian Cartel Court, which, following a request by the Austrian Federal Competition Authority, considered a horizontal potential competition theory of harm but concluded it did not raise competition concerns. The Cartel Court did, however, agree that the

12. See for example the CMA Merger Assessment Guidelines at paras. 5.1–5.6.

merger also raised vertical concerns and approved the merger only subject to conditions[c] which was affirmed by the Supreme Cartel Court.[d] This case and the Competition Appeals Tribunal's decision is discussed further in section 4.1.

[a] CMA Facebook Giphy decision. https://www.gov.uk/cma-cases/facebook-inc-giphy-inc-merger-inquiry#final-report. This merger was also cleared by the Austrian Federal Competition Authority as discussed later in this paper.

[b] Meta appealed the CMA's decision on 7 grounds, 6 of which were dismissed by the Tribunal. The Tribunal agreed with Meta on a remaining procedural ground, namely that the CMA had wrongly excised confidential information from third parties from its provisional findings which impeded Meta's ability to challenge the decision. This led to the CMA re-examining the case, including new submissions from Meta and Giphy, but it confirmed its initial order that Meta must divest Giphy.

[c] Austrian Federal Competition Authority press release, 2 March 2022, Meta (Facebook)/Giphy merger: AFCA appealing against conditional clearance: BWB Bundeswettbewerbsbehörde.

[d] Austrian Federal Competition Authority press release, 24 June 2022, Meta (Facebook)/Giphy merger: Supreme Cartel Court confirms Cartel Court's conditional clearance: BWB Bundeswettbewerbsbehörde.

The underlying theories of harm considered in cases focusing on potential competition concerns are not particularly novel. However, the process of formulating predictions about the future state of markets, which is necessary to apply such theories, is arguably more difficult in the digital sector where markets develop and change rapidly, and the lines between competing and complementary/unrelated products can be blurred. This is complicated further by the fact that many platforms operate in multi-sided markets, so authorities may have to assess the scope for future competition across multiple markets, not just in relation to the products/services being provided on the consumer side. These factors can complicate the process of applying an otherwise standard theory of harm in the digital space.

In their ex-post assessment of the UK authorities' review of the Google/Waze Mobile and Facebook/Instagram mergers, (Lear, 2019) find that in assessing whether the entity being acquired may constitute a competitive constraint in the future, the OFT placed significant weight on the consumer side of the markets (i.e. the functionality of the services provided to consumers) and potentially insufficient weight on the advertising side, which is ultimately where the services are monetised. In Facebook/Giphy, the CMA's focus was on the potential for Giphy to constrain Facebook on the advertising side of the market, but arguably this was a more obvious consideration given Giphy was already actively offering a new advertising service in the US.

2.1.3 Killer acquisition theory of harm

Killer acquisitions, which can be viewed as a subset of acquisitions involving potential competition, have been defined as a theory of harm whereby the firm's strategy is solely to "discontinue targets' innovation projects and pre-empt future competition" (Cunningham, Ederer and Ma, 2021). Such a strategy might be employed if a rival's product presents a sufficient risk to the acquirer's existing product line. It may be more profitable for a firm to buy and shut down an innovative rival than to either suffer the expected loss of revenue

when the innovative firm's product matures, or buy and develop the innovation itself due to the expected cannibalisation of its own sales (OECD, 2020; Cunningham, Ederer and Ma, 2021).

There is an important distinction to be drawn between killer acquisitions and nascent acquisitions, which comprise a broader category of acquisitions of nascent firms with as-yet uncertain future competitive significance. For some nascent acquisitions, the strategy may not be to shut down the acquired innovation but to develop and control it. This could occur when there is the potential for the nascent firm's product to grow into a direct rival (that is, a nascent potential competitor theory of harm). It could also occur when there is the potential for the product to grow into an important input or a complement to the acquirer's product line, which could give rise to anticompetitive vertical or conglomerate effects (OECD, 2020).

In recent years, concerns have been raised that killer acquisitions may be occurring in the digital space and escaping authorities' scrutiny, given the volume of acquisitions that have taken place involving large platforms acquiring small or nascent firms that fall below notification thresholds. However, some experts have suggested that some of the unique features of digital markets make killer acquisition strategies less appealing than in other industries such as pharmaceuticals, where killer acquisitions have been closely studied.

For example, (Bourreau and de Streel, 2020) argue that in digital markets, incumbents may have more incentives to develop the innovation than the entrant which created it, including because the incumbent's significant existing user base, combined with network effects, economies of scope and potential demand-side synergies, could lead to broader scale adoption of the innovation. In their study of 175 digital mergers between 2015 and 2017 (Gautier and Lamesh, 2020) conclude that killer acquisitions were not widespread. They determine that while most of the acquired products were discontinued post acquisition, the motivation for these mergers was to acquire assets, technology and R&D to improve the acquirer's existing products and further strengthen their market positions. A similar observation has been made by the French Autorité de la concurrence (Autorité de la concurrence, 2020).

The Department of Justice's (DoJ) lawsuit in relation to Visa's proposed acquisition of Plaid in 2020[13] is one of the rare examples of competition authority putting forward a killer acquisition theory of harm. The DoJ alleged that Visa's motive in acquiring Plaid, which had developed an innovative payments platform, was to eliminate it as a competitive threat to its online debit business, in which Visa holds a dominant position in the US, before Plaid had a chance to succeed. The lawsuit ultimately did not proceed as the parties abandoned their merger plans.

Others have argued that "reverse killer acquisitions" may be more prevalent than killer acquisitions (for example, Caffarra, Crawford and Valletti, 2020). The reverse killer

13. DoJ press release, Visa and Plaid Abandon Merger after Antitrust Division's Suit to Block, 12 January 2021.

acquisition theory of harm involves an incumbent firm which, in the process of developing a product/service to enter a new market, decides instead to acquire a target company that has already developed that functionality/capability, thus extinguishing its own innovation efforts (i.e. "buy-vs-build" (Caffarra, Crawford and Valletti, 2020)). An example of such a theory can be seen in the US Federal Trade Commission's efforts to block Meta's acquisition of Within, which was discussed in section 2.1.2.

Ultimately, while the theoretical risk of killer acquisitions is often raised in relation to digital mergers, such theories of harm have rarely been assessed by competition authorities (for example, Robertson, 2022). This is to be expected given the nature of killer acquisitions and existing merger notification thresholds.

2.2 Non-horizontal theories of harm

Large platform companies often attain a position allowing them to exercise control over access to key users, products, or services, and govern cross-market ecosystems. This position can be safeguarded and reinforced through mergers and acquisitions in neighbouring or otherwise related markets, which allow such companies to expand their portfolio of products and services. Thus, non-horizontal theories of harm, be it vertical or conglomerate, are at the heart of the assessment of the majority of digital mergers, where these effects often overlap and intersect. Especially where ecosystems are involved, isolating vertical and conglomerate effects might be unfeasible.

Vertical effects arise in concentrations involving companies that are vertically related, active at different levels of the supply chain. Conglomerate effects arise when the products of the merging firms are not in the same product market, nor are they inputs or outputs of one another (OECD, 2020). Conglomerate mergers thus involve firms that are not direct competitors but are active in related or neighbouring markets. As such, they do not lead to a loss of direct competition.

Non-horizontal mergers have traditionally been presumed mostly pro-competitive,[14] as the efficiencies that can stem from these transactions, such as the elimination of the double-marginalisation problem, the reduction of transaction costs, economies of scale and scope, and the creation of incentives for investment and innovation, are believed to typically counterbalance the potential harm to competition. Although this is found to be true in a range of industries, concerns about perceived underenforcement of mergers in digital markets have reignited the debate (OECD, 2019; E.CA Economics, 2022).

14. See for example paragraphs 10–14 of the EC's Guidelines on the Assessment of Non-Horizontal Mergers under the Council Regulation of the Control of Concentrations Between Undertakings. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52008XC1018%2803%29&qid=1675871571943.

Due to the features and dynamics of digital markets (section 1), non-horizontal effects can constitute a more prominent concern than in mergers in more traditional markets. This is especially the case given the presence of ecosystems and multi-sided business models, where horizontal, vertical and conglomerate considerations are often intertwined.

Non-horizontal theories of harm can take a variety of shapes and forms in digital mergers, as shown in the following sections. However, similarly to more traditional markets, the core of the theory pertains in most cases to foreclosure concerns. In relation to vertical effects, in digital markets the concern is often around the risk of input foreclosure, e.g. foreclosing access to the target company's products or services, which are key inputs for the merged entity's (and its competitors') core products or services. As to conglomerate effects, foreclosure strategies are commonly based on tying and bundling, allowing a company to leverage its market power from one market to another.

2.2.1 Foreclosure through access degradation

Due to the presence of vast ecosystems owned by large digital platforms, often with gatekeeper power, it is common for firms in digital markets to heavily rely on access to rivals' technology, operating systems, messaging applications, or other 'virtual' inputs, in order to provide their products or services. Input foreclosure, carried out in the form of access degradation, is thus a prevalent concern in the assessment of digital mergers. Moreover, as data is an important competitive factor and input in digital markets, theories of harm built around the risk of foreclosure of the target company's data are also not rare. These will be discussed further in section 2.3.

Box 3 illustrates, with two case examples based on similar factual scenarios, how authorities have considered the risks of access degradation in their theories, in particular in relation to application programming interface (API) access.

Box 3. Access to APIs – case examples

In the 2022 Meta/Kustomer case, the main theory of harm put forward by the EC[a] entailed the risk that, after the merger, Meta could deny rival providers of customer relationship management (CRM) software services,[b] including potential new entrants, access to APIs for its messaging channels. Since Meta's messaging channels were key inputs for providers of customer service and support CRM software, this strategy could foreclose Kustomer's close rivals and new entrants, reducing competition in the market for the supply of CRM software and the market for the supply of customer service and support CRM software.

A similar theory was considered by the JFTC in 2021 in the merger between SalesForce, which supplied CRM software services, and Slack, which provided business chat messaging services.[c] Like the EC, the JFTC assessed the risk that the merged entity could deny or reduce the quality of rival business chat providers' access to Salesforce's APIs. The authority ultimately dismissed this concern, including because of competitive pressures in neighbouring markets, evidence

suggesting that it was of limited importance for businesses to integrate CRM software with business chat services, and the fact that many businesses multi-home with chat services.

[a] EC decision Meta/Kustomer. https://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=2_M_10262. This merger was also cleared by the FTC, CMA, Bundeskartellamt and ACCC.

[b] Such software applications are used by businesses for engaging with their customers by answering questions, solving problems and giving advice in the context of the business-customer relation. https://ec.europa.eu/commission/presscorner/detail/en/ip_22_652.

[c] JFTC decision SalesForce/Slack. https://www.jftc.go.jp/en/pressreleases/yearly-2021/July/21071.html. This merger was also cleared by the DoJ.

Foreclosure theories of harm can also be applied where the parties are not in a vertical relationship, as it is often the case in digital mergers. Indeed, in digital markets, the products offered by the merging parties often interact with each other as parts of a broader system, where the different components need to be able to integrate and work together and interoperability is thus of paramount importance for the functioning of the system. In these cases, access degradation can take place through the degradation of interoperability, i.e. a "relative deterioration of the conditions in which third parties' products interact with the merged entity's own products post-transaction (and/or vice versa)" (Beaudouin and others, 2022).

The effect of this strategy, which can involve both conglomerate and vertical effects, is to foreclose rivals by degrading either the supply of assets (information, interfaces, prototypes etc.) or the technical support necessary to ensure interoperability to the benefit of the merged entity's combined products offering. This can take the form of a decrease in quality or temporal delays in the provision of the necessary input, or not passing on technical improvements and updates to rivals. Moreover, such degradation can be total or partial, and it can be targeted to specific competitors or concern all third parties. (Beaudouin and others, 2022) defines this practice as "a form of technical tying between products belonging to distinct relevant markets that are closely related due to their interoperation in a broader system".

This theory of harm emerged with respect to the Google/Fitbit merger, which was cleared by EC in 2020[15] subject to conditions. This was a highly complex case involving horizonal, vertical and conglomerate theories across many markets (box 7). One of the main concerns for the EC was the risk that, after the merger, Google would foreclose Fitbit's rival wrist-worn wearable device makers by degrading their interoperability with the Android operating system, that is, a technical tying strategy (section 2.2.2).

Key considerations included the significant overlap between users with wrist-worn wearable devices and users with smartphones, and in particular those relying on Google's Android OS, given Google's dominant position. As a result, customers relied heavily on the interoperability between Android OS and their wearable devices. Google committed to continue to license for free to Android original equipment manufacturers all public APIs covering all core

15. EC decision Google/Fitbit. https://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=2_M_9660. This merger was also cleared by the DoJ and JFTC and was considered by the ACCC.

functionalities that wrist-worn devices need to interoperate with Android smartphones, including any future improvements and updates.

In the Microsoft/Nuance merger in 2022, the EC and ACCC[16] considered whether Microsoft would have the ability/incentive to foreclose rivals to Nuance, a transcription software company with a strong focus on the healthcare sector and customer engagement solutions. Specifically, the authorities were concerned that Microsoft could degrade rivals' access to its suite of technology products, given the vertical and conglomerate links between the two companies. It was determined that Microsoft would not have the incentive to foreclose as Nuance's competitors could switch to a number of alternative providers of Microsoft's services.

2.2.2 Leveraging theories of harm

When the merging parties are active in related markets, the merger could allow the merged entity to leverage its dominant position in one market to disadvantage or foreclose competitors in another more-competitive market. The so-called abusive leveraging theories of harm focus on ways in which this can take place (OECD, 2020). A first example pertains to foreclosure strategies enabled by the leveraging of market power through bundling or tying, which combine the previously separate offerings of the merging parties. This was the case in the M3/Nihon Ultmarc and Google/DoubleClick mergers (box 4). In digital markets, bundling and tying are also at the core of 'platform envelopment' strategies (Condorelli and Padilla, 2020). This will be discussed in section 3.1.

Box 4. Leveraging through bundling and tying

In the merger between M3 and Nihon Ultmarc in 2019, the JFTC[a] considered a standard contractual tying theory of harm. M3 operated an online drug information platform (supplying information from pharmaceutical companies to doctors) and Nihon Ultmarc was the sole supplier of medical databases to entities including pharmaceutical companies. The databases contained information about medical institutions and doctors/pharmacists working within them. The JFTC was concerned that the merged entity could make the supply of the medical databases, which were indispensable inputs, conditional on pharmaceutical companies not using rival drug information platforms, or alternatively, offering the databases at a discount on condition that pharmaceutical companies only use the merged parties' platform. As a result, it cleared the merger subject to the condition that the merged entity could not provide its medical databases on conditions related to either the use of the merged parties' other services or the non-use of competitors' services.

The competitive impact of bundling and tying strategies can be exacerbated in digital markets due to network effects. This was factored into the FTC's review of Google's acquisition of DoubleClick in 2007,[b] which included a theory of harm whereby Google could leverage

16. EC decision Microsoft/Nuance. https://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=2_M_10290. ACCC decision Microsoft/Nuance. https://www.accc.gov.au/public-registers/mergers-registers/public-informal-merger-reviews/microsoft-corporation-nuance-communications-inc. This merger was also cleared by the DoJ.

DoubleClick's leading position in third-party ad serving tools to its advantage in the ad intermediation market by tying or bundling its own Adsense and Adwords products to DoubleClick's tools. In its assessment, the FTC considered whether this could lead to the ad intermediation market 'tipping' to Google due to network effects. However, the FTC concluded that DoubleClick, despite its high market share, did not have market power and that therefore such a strategy would fail, as DoubleClick's customers who did not want to use AdSense could switch to alternative ad serving tools. Further, the FTC considered that the ad intermediation market was unlikely to tip because, at the time, it was a fragmented and competitive marketing comprising highly differentiated offerings.

[a] JFTC decision M3/Nihon Ultmarc. https://www.jftc.go.jp/en/pressreleases/yearly-2019/October/191024.html.

[b] Statement of the FTC Concerning Google/DoubleClick. https://www.ftc.gov/legal-library/browse/cases-proceedings/public-statements/statement-federal-trade-commission-concerning-googledoubleclick. This merger was also cleared by the EC and ACCC and may have been considered by other authorities.

Digital companies can also achieve technical tying through platform design, by integrating a product or service into another product, or through pre-installation practices (Bundeskartellamt, 2022; OECD, 2020). Technical ties are generally considered to be more effective than contractual ties because they are automatic, require effort to undo, and do not require compliance monitoring (OECD, 2020).

In the Microsoft/LinkedIn merger, cleared by EC in 2016 subject to conditions,[17] one of the theories revolved around the risk that Microsoft could leverage its strong position in PC operating systems (Windows) and productivity software (Word, Outlook, Excel, PowerPoint) to strengthen LinkedIn's position in the professional social networks market. This could be achieved by requiring pre-installation of LinkedIn on all Windows PCs and integrating LinkedIn into Microsoft Office. The EC also considered that conglomerate effects could arise from Microsoft restricting or denying LinkedIn's competitors' access to Microsoft's APIs, which were required in order to interoperate with Microsoft products, and access to user data stored in the Microsoft cloud (access degradation is discussed in section 2.2.1), leading to foreclosure.

In addition to the more common bundling and tying, in certain circumstances large platforms can adopt other strategies to leverage their market power, which can be enabled or facilitated by a merger. Box 5 provides two case examples where competition authorities have looked at this risk in their theories of harm.

17. EC decision, Microsoft/LinkedIn. https://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=2_M_8124. This merger was also cleared by the FTC.

Box 5. Alternative leveraging strategies

Large platforms can also leverage their market power and foreclose rivals using self-preferencing strategies following a merger. For instance, as outlined by Robertson (2022), in the merger between Sully System, a non-food online retailer of consumer goods, and CENEJE, a search engine and online price comparison site also active in online advertising, the Slovenia Competition Protection Agency's theory of harm was built around the risk that the merged entity could discriminate between the offers of online retailers and use non-objective search and ranking algorithms to preference its own services, foreclosing rival online retailers. The merger was cleared subject to conditions.[a]

More recently, a potential theory of harm of leveraging through predatory pricing has emerged in the Amazon/iRobot merger announced in 2022, which is currently being considered by the FTC.[b] In this investigation, still on going, third parties put forward to the FTC the theory that Amazon could sell iRobot's Roomba smart vacuums at or near a loss including through Amazon's Prime subscription service, which would allow it to foreclose other smart vacuum makers and to strengthen its position in smart home technology services.[c]

Source: Robertson, V. (2022). Merger Review in Digital and Technology Markets: Insights from National Case Law.

[a] Javna agencija Republike Slovenije za varstvo konkurence, Sully System/CENEJE (3061-27/2017-71, 12 April 2018) http://www.varstvo-konkurence.si/ostali-dokumenti/arhiv-odlocb/odlocba411/.

[b] https://edition.cnn.com/2022/09/20/tech/roomba-amazon-ftc-investigation/index.html; https://content.mlex.com/#/content/1404526. This merger is also reportedly being considered by the EC; see https://www.ft.com/content/b05a1260-ee5a-4ac8-9a34-31cdb8104cf1, and the https://www.theguardian.com/technology/2023/apr/06/cma-to-investigate-amazon-17bn-takeover-of-roomba-irobot; https://edition.cnn.com/2022/09/20/tech/roomba-amazon-ftc-investigation/index.html; https://content.mlex.com/#/content/1404526. This merger is also reportedly being considered by the EC; see https://www.ft.com/content/b05a1260-ee5a-4ac8-9a34-31cdb8104cf1.

[c] https://www.fightforthefuture.org/news/2022-09-09-letter-to-the-ftc-challenge-amazon-irobot-deal.

2.3 Data related theories of harm

Data plays a prominent role in both horizontal and non-horizontal theories of harm in digital mergers. The way in which data-related theories of harm are developed may depend in part on the nature of the data in question. Acquisition of data that is specific and unique (that is, it is exclusive information for which there are no substitutes) could lead to standard vertical foreclosure concerns if it constitutes an important input for rivals in a downstream market. These concerns centre on the ability and incentives of the merged entity to deny or limit access to the essential data source.

Such a theory of harm was used by the EC in its assessment of Microsoft/LinkedIn. The Commission looked at whether, post merger, Microsoft could restrict access to LinkedIn's full dataset, which could potentially be used for machine learning by rival CRM software providers. At the time of the merger, LinkedIn was not already providing such access, so the Commission needed to consider whether, in the absence of the merger, LinkedIn would have

started providing access to its full dataset as a monetisation strategy and this would have become an important input for rivals.

The Commission dismissed this theory of harm for various reasons, including because there was no evidence that LinkedIn was planning to license its full dataset in the future, there were regulatory and privacy policy obstacles, and LinkedIn's data was unlikely to develop into an important input for rival suppliers in the following two-three years. The Commission noted that rival CRM providers were already developing advanced functionalities without access to LinkedIn's data. Further, LinkedIn's data would constitute only one of many types of data that are needed for machine learning purposes and there were alternative sources of data similar to LinkedIn's that were available (i.e. it was neither essential nor unique).

However, as outlined by (Hoffmann and Johannsen, 2019), even the acquisition of data considered to be more ubiquitous and non-rivalrous can arguably raise competition concerns if the acquirer is dominant in a market that relies on Big Data. In that circumstance, it may be not so much the exclusive quality of the newly acquired data that is of concern, but the acquirer's ability to combine it with its existing datasets (that is, expanding its store of Big Data) and mine it to extract valuable information.[18] This could further entrench the acquirer's existing position in a market that relies on Big Data, such as online advertising, making entry or expansion into this market more difficult and thus raising horizontal concerns.

The categorisation of theories of harm reflecting concerns around large platforms' accumulation and combination of data is not always clear cut, and they have been articulated as both horizontal and non-horizontal at various times by regulators. For instance, in its assessment of Google/DoubleClick the EC looked at data combination as a non-horizontal theory of harm, whereas in Google/Fitbit and Microsoft/LinkedIn, it assessed it as a horizontal theory of harm. Box 6 provides an overview of three recent cases where the potential risks related to the accumulation and combination of data were taken into account in the development of the theories of harm.

Box 6. EC consideration of data

Google's acquisition of DoubleClick in 2008 is an early case example where the potential for a digital platform to gain a competitive advantage from accumulating and combining data was considered. Here, amongst numerous theories of harm, the EC[a] and FTC assessed whether the combination of Google and DoubleClick's datasets would give Google an advantage in ad intermediation that could not be replicated even by other integrated competitors such as Microsoft and Yahoo.

18. Martens (2020) argues that data aggregation is a source of economies of scope, because merging two complementary datasets can generate more insights and economic value compared to keeping them in separate silos.

DoubleClick had contractual restrictions in place with its customers at the time that prevented DoubleClick's data from being combined with Google's and used for targeted advertising, but the regulators acknowledged that such contracts could expire, be modified or breached. The EC, which articulated the issue as a vertical theory of harm, considered that DoubleClick's customers would have no incentive to allow their data to be used in this way and that Google would not be able to require them to, as DoubleClick did not have market power in the market for ad serving tools. Both authorities also focused on the characteristics and non-exclusive nature of the DoubleClick's data, finding that even if the data sources could be combined, DoubleClick's data was not of a type that would confer a significant advantage to Google over other ad intermediation services. It was also noted that other integrated providers such as Microsoft and Yahoo already had access to similar datasets.

The EC considered a similar theory again in 2013 in its assessment of Facebook's acquisition of WhatsApp. In particular, it looked at whether Facebook could start collecting and utilising WhatsApp's data in the provision of social media advertising and thus strengthen its position in this market. The EC noted that that there would be both technical and privacy policy obstacles to this, but considered that even if these were overcome, there would remain a sufficient number of alternative online advertising providers, including Google, that would constrain the merged entity and that also collect user data. The FTC considered a similar theory of harm and ultimately imposed conditions preventing Facebook from using WhatsApp data for targeted advertising.[b]

More recently, a horizontal data combination theory of harm was developed in the EC's assessment of Google's acquisition of Fitbit. Specifically, the EC considered whether Google could potentially use and combine user data acquired through Fitbit to strengthen its position in several online advertising markets. Central to the EC's overall conclusion, which led to the imposition of commitments, was its finding that Fitbit data is specifically relevant and valuable for online advertising and that none of Google's rivals in online advertising had, or were likely to be able to obtain, similar data or data collecting capabilities to Fitbit.

[a] EC decision, Google/DoubleClick. https://ec.europa.eu/commission/presscorner/detail/en/IP_08_426.
[b] https://www.reuters.com/article/us-facebook-whatsapp-idUSBREA391VA20140410.

When considering data-based theories of harm, whether articulated as horizontal or non-horizontal effects, (Hoffmann and Johannsen, 2019) note that the focus at least of the EC has still largely been on the characteristics of the new data source in terms of its exclusivity and its specific value as an input. They call for authorities to focus more on the overall advantage the acquirer gains from the resulting combined store of Big Data, which can materialise even if the newly acquired data is ubiquitous and non-rivalrous, because its value is derived from the ability to combine multiple and varied data sources which can be mined for valuable insights.

The authors argue that because Big Data can be exploited by the acquirer to strengthen its position not only in core markets, but potentially also in new or undiscovered markets, the analysis therefore also needs to look beyond the specific product markets the focus of the merger. Although the incremental acquisition of ubiquitous, non-rivalrous data through a merger is unlikely to lead to absolute foreclosure in a specific product market, as it is still possible for rivals to access the same or comparable data, it could still lead to 'relative

foreclosure'. This is because the gap between the ability of the acquirer to exploit that data (including by combining with its pre-existing datasets) compared to its competitors may be difficult to overcome, due to factors such as network effects, and economies of scale and scope.

The authors thus posit a 'relative foreclosure theory of harm' involving data and suggest the existing portfolio effects theory of harm as a suitable framework for applying it, as this theory already reflects the competitive advantage that can be gained by an entity having a presence in multiple complementary markets that goes above and beyond its power in each of those markets considered individually. In the case of Big Data, the advantage comes from the platforms presence in an increasingly broad spectrum of activities from which additional data can be extracted.

The potential for non-unique data to nevertheless advantage a merged entity was considered by the JFTC in its assessment of the Z Holdings/LINE merger (box 1). Specifically, in assessing the parties horizontal overlap in online news distribution, digital advertising and advertising intermediation, and code-based payment services, the JFTC looked at the ability of the merged entity to utilise data obtained from its range of business activities to enhance its position in these markets. In relation to news distribution and digital advertising, the authority determined that the nature and volume of the merged entity's data, compared to that of its competitors, would not put it at a substantial advantage. However, it reached a different conclusion in respect of the emerging code-based payment services market, finding that despite the merged entity's data not being unique, its comparative position in terms of the volume, range, and frequency of collection of data gave it an advantage over its competitors which would likely impact competition. Thus, one of the conditions imposed on the merger was that the merged party report annually on certain aspects regarding the use of its data.

Finally, data also plays a central role in ecosystem-based theories of harm (section 3), due to its ability to be combined and leveraged by digital conglomerates at many points throughout their ecosystems. A number of commentators therefore consider that theories of harm need to better reflect the potential for ecosystem operators to leverage a data advantage obtained through a merger in even distantly related markets (for example, Robertson, 2022).

2.3.1 Access to commercially sensitive information

Competition authorities have also looked at theories of harm arising from an acquirer gaining access to commercially sensitive information, which may provide it with a unique advantage over its competitors. Theoretically, like data-based theories of harm, theories related to commercially sensitive information could be horizontal or non-horizontal in nature.

For example, in its assessment of Apple's acquisition of Shazam in 2018, the EC[19] was concerned that Apple could gain access to commercially sensitive data about customers of competing music streaming providers. The Commission theorised that this may have allowed Apple to improve its ability to target such customers and encourage them to switch to Apple's own streaming service, Apple Music, potentially foreclosing rival services. The EC ultimately determined that even if Apple had the ability and incentive to use Shazam's customer data to disadvantage rival streaming providers (which was unclear), it would not provide Apple with a material competitive advantage because other apps (including music streaming services) could also access at least some of the same data and there were other services available offering the ability to target music streaming customers.[20]

Similar considerations arose during the Czech Office for the Protection of Competition's (OPC) assessment of an acquisition by private equity group, Rockaway Capital, of Heureka, an online shopping comparison site. As summarised by (Robertson, 2022), the OPC was concerned that Rockaway may require Heureka to collect excessive amounts of consumer data, which it could then use to its advantage in its other businesses. The merger was cleared subject to commitments to address this concern.

While such theories focus strictly on the potential competitive harms arising from access to commercially sensitive information (as opposed to other considerations such as privacy), they may become more prevalent given the ever increasing social and regulatory concerns about excessive collection of consumer data. (Zingales and Renzetti, 2022) note that in theory, data protection rules may constrain an entity's use of commercially sensitive data, however they also raise the more contentious question of whether the existence of such rules should be considered a sufficient deterrent to the ability and incentive of firms to take advantage of such information, or whether the track record of the company in complying with such rules should also be factored in.

2.4 Concluding remarks

The mapping exercise carried out in this chapter provides an insight into how competition authorities have developed their theories of harm to capture competition issues stemming from digital mergers. Several relevant points emerge.

First, horizontal theories of harm related to both actual and potential competition have been considered, with the latter generally leading to more complex assessments. Other concepts which are often discussed in conjunction with digital mergers, such as killer acquisitions,

19. EC Apple/Shazam decision. https://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=2_M_8788. Other authorities may have also considered this merger.
20. The JFTC's assessment of the SaleForce/Slack merger is another example of a case where access to confirmation information was considered.

ecosystems and innovation, have in practice only featured rarely in the horizontal theories of harm employed by merger authorities to date. The most recent thinking around ecosystems and innovation related theories of harm will be addressed in section 3.

However, it appears that competition authorities predominantly consider non-horizontal theories of harm, where vertical and conglomerate effects often coexist or overlap. Overall, the distinction between substitutable, vertically related and complementary products is often blurred in digital markets, meaning that the traditional differentiation between horizontal, vertical, and conglomerate theories might be less relevant than in other markets. This is particularly apparent from theories of harm built around the risks of data accumulation, which have been articulated both as horizontal and non-horizontal.

Almost all the theories that have been applied so far are traditional theories, often pertaining to foreclosure risks, which have been adapted to varying extents to reflect key features of digital markets and their role in the competitive dynamics. For instance, classical input foreclosure theories have been used to assess virtual inputs, such as APIs, operating systems, or data, which take on a prominent role in these mergers. Furthermore, given how important it is for products and services to be able to interact with each other in these markets, foreclosure through the degradation of interoperability has been a concern in a number of cases. Similarly, standard foreclosure strategies concerning the leveraging of market power through bundling and tying have been put forward in several instances, with a focus on pre-installation and integration practices, or technical tying.

Although traditional theories have been widely applied in digital markets, these arguably do not always adequately reflect the interrelation between different sides of a multi-sided market, or the potential impact of a merger on the ecosystem more broadly, raising the question of whether they are able to fully capture the extent of competitive harm in digital markets, especially if ecosystems are involved.

In particular, the effects of a merger may be felt more acutely in the non-consumer facing side of a muti-sided market, or markets other than the ones focus of the merger. Further, the competitive harm might be fully understood only when looking at the combined effect of the transaction on several related markets. When this is the case, or when multiple theories are relevant for the same case and strongly interrelated, a segmentation of theories of harm according to the traditional classification of horizontal/vertical/conglomerate effects might not tell the full story. The Google/Fitbit merger (box 7) exemplifies the complexities of mergers involving digital ecosystems where there are multiple and interconnected avenues for competitive effects.

As such, although traditional theories of harm have been adapted to some degree to account for the specificities of digital markets, in order to reduce the risk of type II errors[21]

21. Considering that the vast majority of digital mergers have, to date, been cleared, type II errors (authorising a merger that is anticompetitive) appear to be a more relevant concern than type I errors (prohibiting a merger that is procompetitive).

it is important to understand if they can be further adapted to more fully reflect the potential sources of competitive harm, or if all new theories might need to be developed.

Box 7. Google/Fitbit

The EC's assessment of Google/Fitbit is illustrative of the potential complexity of assessing mergers involving digital ecosystems, which, under the traditional merger control framework, will often involve developing (and proving) a web of interconnecting vertical and non-vertical theories of harm. Here, the assessment comprised horizontal theories stemming from data combination (box 6) non-horizontal theories concerning interoperability degradation and access foreclosure (section 2.2.1), as well as a theory relating to the acquisition of commercial sensitive information. This latter theory, which was dismissed, looked at whether Google would obtain access to such data, for example through third-party apps that interoperate with Fitbit devices, and whether this would raise either horizontal or non-horizontal concerns.

This case demonstrates the difficulties in trying to anticipate the effects of a merger when the acquirer operates across many markets, and identify sources of potential harm to competition. For example, the acquisition of Fitbit's data was seen as both a mechanism by which Google could potentially further strengthen its existing dominant position in several well-established online advertising markets (by combining Fitbit data with its existing extensive datasets) but also as an asset it could potentially use to foreclose competition in the nascent field of digital healthcare technologies. Further, when assessing the scope for Google to foreclose competing providers of wrist-worn wearable devises, the EC considered not only the potential for Google to degrade interoperability with respect to its wearable operating system, but also its potential to do so by degrading access to each of a number of Google apps, including Google Search, Google Fit, Google Pay, Google Maps, Google Play Music, Google Assistant and Google Translate. This required the EC to separately assess the significance of each.

Ultimately, the EC upheld concerns relating to theories of harm impacting no less than three different markets and dismissed concerns involving a further eight. The complexity of this assessment demonstrates the difficulties authorities face in trying to systematically capture the full extent of the butterfly effect resulting from mergers involving vast digital ecosystems.

3. New theories of harm

In addition to the more traditional theories explored in section 2, competition authorities have started to consider newer theories, which take into account key elements of digital markets such as the role of ecosystems and innovation. Moreover, several experts and academics have directly or indirectly proposed new theories of harm to address the perceived gaps in the more traditional theories that have been used to date to assess digital mergers.

The extent to which they represent wholly new theories rather than adjustments to existing theories varies and could be debated, but it is instructive to set out some of the thinking that has occurred in terms of finding ways to better reflect the distinctive characteristics of

digital markets, and their potential to lead to competitive harm in merger assessments. The sections below provide an overview of the most recent developments, be it in the form of proposals by experts and academics or as first attempts by competition authorities to further push the boundaries of traditional theories.

3.1 Ecosystem-based theories

As previously mentioned, the digital sector has become increasingly dominated by a small number of sophisticated digital ecosystems. The implication of this is that the effects of a merger may be felt at many points throughout the ecosystem, potentially far removed from the specific markets the focus of the merger. As such, competition authorities and other commentators have explored ways in which theories of harm can account for the potential impacts of a merger on an ecosystem more broadly. This raises obvious challenges, such as the potential need to consider multiple, less certain counterfactuals spanning many markets.

Ecosystem theories of harm do not fit neatly into the traditional categorisation of merger theories and can apply whether the products or services supplied by the merging entities are complements, substitutes, or unrelated (OECD, 2020) or a combination of these. However, at their core is the notion that mergers involving ecosystems may have a broader impact in terms of entrenching the position and strength of the ecosystem as a whole. The gatekeeper role that ecosystems play, combined with their significant informational advantage, then makes entry by a new firm in any of the markets within which the ecosystem operates very difficult. It may also enable the merged entity to directly leverage its ecosystem to harm competition in a specific market.

In a review of 69 digital and tech merger cases by selected EU competition authorities and the UK, (Robertson, 2022) concludes that digital mergers have typically been assessed against traditional theories of harm and that theories based on building and reinforcing digital ecosystems have been "largely absent" from decisional practice. For instance, reflecting on the EC's decision in Apple/Shazam, the author suggests that when individual foreclosure theories are considered in isolation, this might lead to a conclusion that a merger will not impact competition, whereas broader consideration of the strategies in combination, and their potential to reinforce a digital ecosystem as a whole, may have led to a different conclusion. Robertson considers that while enforcement guidelines do not currently contemplate theories involving the strengthening of a broader ecosystem, they do not necessarily preclude such an approach, and given that platforms do indeed pursue ecosystem-strengthening strategies, such theories should not be overlooked. Similarly, (Zingales and Renzetti, 2022) note that the increasingly prevalent business model of ecosystems, and ecosystem power in particular, which can be strengthened through conglomerate mergers, have not received adequate attention from competition authorities. Notably, they stress how "it is of utmost importance to understand system competition, rather than to focus on a narrowly defined relevant market".

Even if they have not yet been utilised in assessments which have led to a final decision, ecosystem-strengthening theories are slowly starting to emerge in practice. An example of this is the German Bundeskartellamt's aborted theory in respect of the Meta/Kustomer merger. Further, while it was not explicitly categorised as such by the CMA, its theory of harm in respect of cloud gaming in its assessment of Microsoft's acquisition of Activision Blizzard, which ultimately led to its decision to block the deal, also arguably contains elements of an ecosystem theory (box 8).

Box 8. Ecosystem theories of harm – first applications

In the Meta/Kustomer case, the Bundeskartellamt,[a] deemed it necessary to assess not only the potential for the merger to impact competition between rival cloud-based CRM services, where Kustomer was active, but also "the wider context of Meta's ecosystem" which included the Facebook platform, WhatsApp, Instagram, and its monetisation through online advertising. The Bundeskartellamt's theory of harm considered the risk that the merger would further expand, protect or strengthen Meta's ecosystem, which could indirectly lead to effects in specific individual markets.

Notably, it focused on the advantage Meta could obtain through the accumulation of additional data from Kustomer's corporate clients and their end customers, which could be used at various points within Meta's ecosystem, particularly for online advertising. The authority also considered whether Meta could further reinforce its market power by using technologies acquired from Kustomer to develop its own new and existing services. These would complement Kustomer's offerings and would allow the merged entity to offer clients a wide range of related services.

The Bundeskartellamt found that both this data advantage and the ability of Meta to develop complementary services could affect the ecosystem as a whole and could have an indirect effect on competition in markets where Meta already had a strong position, particularly online advertising. However, it ultimately did not proceed to investigate these concerns due to issues surrounding the standard of proof, as it felt that it was "not possible to establish with the necessary level of probability that the services and capabilities associated with Kustomer were of sufficient significance for the ecosystem to develop in such a way to warrant a more detailed examination of the merger".

Despite the fact that this theory was ultimately set aside, the focus on the ecosystem as a whole and the acknowledgement that the possible anticompetitive effects of a merger can manifest themselves in the form of strengthening of market power at the ecosystem level, as opposed to a single market, is a novel and significant development. This reflects a deeper understanding of the key dynamics of platform markets and, most importantly, of the relevance of ecosystems for large platforms' market power and competition in the sector more broadly. The Bundeskartellamt is not the only authority who has started to move in this direction.

In its assessment of Microsoft's acquisition of Activision Blizzard,[b] a high-end digital game publisher, the CMA considered a theory of harm that Microsoft could leverage its existing multi-product ecosystem, together with Activision's game catalogue, to strengthen network effects, raise barriers to entry and ultimately foreclose rivals in cloud gaming services. Key to its decision to block the merger was its finding that Microsoft already has a strong position in a number of key product areas that are important inputs into cloud gaming (namely, PC operating systems,

cloud infrastructure capabilities and existing first party content) which the merger would further strengthen, making it difficult for rivals to compete with this integrated offering. While this was characterised as a vertical theory of harm by the CMA, it arguably also contains elements of a broader ecosystem-based theory, as the CMA's concern specifically centred around the potential for the merger to reinforce Microsoft's existing ecosystem, leading to harm in a nascent but rapidly developing market. As the CMA made clear: "We believe that Microsoft's strengths in cloud gaming services should not be assessed in isolation. The evidence suggests that the combination of Microsoft's multi-product ecosystem gives it a stronger position in cloud gaming than would be suggested by assessing each of its products and services individually".

[a] Bundeskartallamt Meta/Kustomer decision, Bundeskartellamt - News - B6-21/22.

[b] CMA inquiry, Microsoft/Activision Blizzard. https://www.gov.uk/cma-cases/microsoft-slash-activision-blizzard-merger-inquiry. This merger has already been cleared by competition authorities in Japan, Chile, South Africa, Saudi Arabia and Brazil. It is also being considered by the EC, ACCC, New Zealand Commerce Commission and the FTC is seeking to block it.

In line with (Robertson, 2022) and (Zingales and Renzetti, 2022; Cremér, de Montjoye and Schewitzer, 2019) consider that there is an 'enforcement gap' in the assessment of conglomerate mergers where the risk to competition may include the further strengthening of a digital ecosystem. They suggest a specific approach to assessing mergers in scenarios where the operator of a digital ecosystem acquires a firm in a separate but related market, but which may have the potential to grow into a competitive threat beyond that market. Specifically, they propose that competition authorities determine first whether the parties operate in the same 'technological space' or 'user space' which can encompass a broad range of user needs, and if so, assess the merger using a horizontal theory of harm analysis, even though the parties do not have overlapping products in the traditional sense. Or in their words, "inject some 'horizontal elements into the 'conglomerate' theories of harm". The assessment then focuses on the competitive threat that the target presents to the acquirer's broader ecosystem and existing user base, rather than its potential to compete in a specific product market. Under this horizontal analysis, they argue, there is no need to grapple with the uncertainties of whether the target could potentially grow into a competitor in the acquirer's existing product market because competition already exists between the user spaces.

Ecosystem theories of harm can also encompass the concept of platform envelopment, which has been defined as the ability of a platform with dominance in one market to enter another platform market (whether the platforms are complements, substitutes, or unrelated) by bundling or tying the two platform products (OECD, 2020). Envelopment strategies can lead to foreclosure in the second market because "as a result of network effects (from the dominant platform's existing user base) and economies of scope (due to shared technology and data), the competing platforms in the second market would be unable to compete" with the merged entity (OECD, 2020). A platform envelopment strategy can be facilitated through conglomerate mergers and has been described as means by which a platform can further expand its ecosystem without having to offer 'revolutionary functionality to win substantial market share' (Robertson, 2022; Eisenmann, Parker and Van Alstyne, 2011). An example of platform envelopment executed through a merger is Google's acquisition of DoubleClick.

3.2 Privacy-focused theories

(Esayas, 2018) proposes a number of approaches for incorporating privacy as a non-price parameter of competition into digital merger assessments, noting that it has been accepted by merger authorities and academics that, at least conceptually, this can be done.[22]

The first approach proposed is the 'privacy as a quality' theory of harm, whereby harms to privacy are considered akin to quality degradations. Within this theory the author seeks to define more concretely the relevant dimensions of privacy competition for the purposes of determining what constitutes a reduction in privacy, drawing from the EU's General Data Protection Regulation (GDPR) and the cases that have considered this issue to date.

Noting that there are differing consumer preferences surrounding the collection and use of data (i.e. some consumers value their data being used for personalised advertising and so may prefer providing more data), the author proposes privacy dimensions that go beyond the volume of data collected, including those relating to the ability of consumers to control and/or make informed decisions regarding their data. As such, reductions in privacy can result from increasing the amount of personal data demanded or expanding usage of existing data, but also from abandoning of end-to-end encryption and conducts that negatively affects users' ability to control their data and make informed decisions.

Another approach suggested is incorporating data privacy considerations into the 'maverick-firm' theory of harm, which is an existing concept contemplated in both the EU and US merger guidelines.[23] This theory acknowledges the potential for competitive harm to result from the acquisition of 'low-end' disruption maverick firms, even if the acquisition doesn't lead to a significant increase in market power. 'Low-end' disruption maverick firms have been defined as smaller companies with fewer resources, able to challenge incumbents by "successfully targeting overlooked segments, gaining a foothold by delivering more-suitable functionality frequently at lower price" (Christensen, Raynor and McDonald, 2015). In the digital setting, a firm offering a service that is lower in quality or slower but with enhanced privacy protections that will be favoured by particularly privacy conscious consumers could be considered such a low-end maverick, and the acquisition of such a firm could be viewed through this lens.

22. The author points to the FTC's decision in Google/DoubleClick and the EC's decisions in Facebook/WhatsApp and Microsoft/LinkedIn.
23. See section 42 of the EC Guidelines on the Assessment of Horizontal Mergers under the Council Regulation on the Control of Concentrations Between Undertakings (EC Horizontal Merger Guidelines) and subsection 2.12 of the Horizontal Merger Guidelines of the US Department of Justice and Federal Trade Commission (DoJ/FTC Horizontal Merger Guidelines).

3.3 Theories incorporating longer-run effects

Several authors theorise that the current timeframes generally used to assess the impact of a merger (two-three years) may be too short to capture the full competitive impact of digital mergers. One of the recommendations from (Lear, 2019), following their review of digital mergers carried out by UK competition authorities over a 10-year period, was that this timeframe could be extended.

(Boom and Samranchit, 2021) propose a theory of harm that specifically seeks to incorporate the longer-term effects of digital mergers. The theory is premised on the understanding that the acquisition of a new product or service by a platform can create efficiencies in the short-run, however such acquisitions can eliminate competition in the long-run by reducing the profitability of entry for new competitors and thus raising barriers to entry.

They consider that the potential for long-run competitive harm is heightened when there are strong economies of scope between the two firms' products/services and complementarity is high (which is often the case in digital markets), as the merged entity will be able to supply the products more cheaply and efficiently, meaning entry by new players will be less profitable. The involvement of an ecosystem may further amplify these effects as "the impacts of an acquisition of a single service may permeate throughout the ecosystem, leading to effects and efficiencies that are difficult to determine a priori". As such, in the authors' view, potential long-term harms are dismissed too readily in favour of short-term efficiencies in mergers involving digital ecosystems.

In terms of the assessment, the authors propose an approach whereby the authority first determines whether the merger raises the risk of long-term competitive effects, at which point the burden of proof shifts and the onus is on the parties to demonstrate (including through commitments) that the risks will not materialise or will be outweighed by efficiency benefits.

The inclusion of long-run effects into digital merger assessments is not supported by all. (Cabral, 2021) considers that digital markets are particularly ill-suited to long-run forecasts because, due to the rapid pace of innovation, their business models are less well defined and market positions more difficult to predict than in more traditional industries. As such, in the author's view, increased enforcement of digital markets should primarily take the form of direct regulation of dominant firms and ex-post remedies rather than merger reform.

3.4 Innovation-focused theories

The assessment of horizontal mergers is in some cases not limited to the merger's effect on prices. Where relevant, theories of harm can take into account the merger's potential impact on non-price parameters of competition, including innovation.[24] While innovation theories are not new, they have been included in this section because to date, they have not been prevalent in the assessment of digital mergers (Argentesi and others, 2021) and it remains to be seen if and how they will be. Indeed, from a review of the literature analysing innovation in the context of mergers more generally, including mergers in other industries where it has been more frequently factored into the assessment, it is clear that there is no consensus around how impacts on innovation can and should be incorporated into merger theories of harm.

In digital markets, characterised by rapid evolution, where multi-sided platforms frequently offer services to one side of the market at zero price and where firms in their early stages may employ a strategy of prioritising growth at the expense of revenue (Gawer, 2021), the impact of a merger on innovation, present and future, may be a more important consideration than the impact on price. What is more contentious, however, is the consideration of the specific theories that can and/or should be used to assess the potential impact of mergers on innovation, including whether such theories need to be firmly linked to specific product markets or whether they can justifiably consider the broader impact on innovation incentives and capabilities more generally. This has been a topic of considerable debate beyond the realm of digital mergers.

One of the few examples of an innovation theory of harm being specifically considered in a digital merger is the OFT's assessment of Google's acquisition of Waze in 2013.[25] In its assessment, the OFT developed a theory of harm whereby the merger may dampen Google's incentives to innovate and improve quality as the result of the loss of a disruptive rival.[26] The OFT acknowledged Waze's rapid and strong growth and the potential for future growth to be accelerated through network effects on account of it being a 'first mover' in terms of its crowd-sourced business model for turn-by-turn navigation services. However, it ultimately did not consider that Waze had achieved sufficient scale in the UK to the extent that it was

24. See for example: the CMA merger guidelines at 4.1, Unilateral effects can arise in a horizontal merger when one firm merges with a competitor that previously provided a competitive constraint, allowing the merged entity profitably to raise prices or degrade non-price aspects of its competitive offering (such as quality, range, **service and innovation**) on its own and without needing to coordinate with its rivals. The EU horizontal merger guidelines at 8. Through its control of mergers, the Commission prevents mergers that would be likely to deprive customers of these benefits by significantly increasing the market power of firms. By 'increased market power' is meant the ability of one or more firms to profitably increase prices, reduce output, choice or quality of goods and services, **diminish innovation,** or otherwise influence parameters of competition. In this notice, the expression 'increased prices' is often used as shorthand for these various ways in which a merger may result in competitive harm.
25. OFT decision. Motorola Mobility Holding/Waze. https://www.gov.uk/cma-cases/motorola-mobility-holding-waze-mobile-ltd.
26. Ibid.

benefiting from 'insuperable' network effects or that the evidence was 'determinative' of it becoming a significant competitor in the UK or a disruptive force in the market. In their ex-post review of this merger assessment (Lear, 2019) considered that the OFT may been too cautious in its approach faced with the uncertainty in future market developments.

In terms of how innovation effects may be incorporated into theories of harm going forward in digital mergers going forward, it is instructive to look at how they have been considered in mergers in other industries. Broadly, two approaches have been used, differentiated by how directly such effects are assessed. As outlined by (Solidoro, 2019), the first, which has been used more extensively both in Europe and the US, typically involves a firm with a late pipeline product merging with a firm with an overlapping pipeline product and the analysis is tied to the specific product market. This approach can be extended to acquisitions of potential competitors who are not yet present in the product market, but also to situations where the two firms are expected to launch a new (or future) product. The impact on innovation is then considered indirectly as part of the competitive assessment, as a potential consequence of the lost rivalry in the market.

The second approach is to consider innovation more directly at the market definition stage. As outlined by (Kerber and Kern, 2014), in the US, this has occurred through the 'innovation markets' approach first proposed by (Gilbert and Sunshine, 1995). This involves the identification of "innovation markets" – that is, firms with overlapping R&D activities and the specialised assets required to carry out that R&D (the entry barriers) – and an assessment of the likely impact of the merger on those activities. The innovation markets approach still involves a link to future products or at least future classes of products (Solidoro, 2019).

More recently, the EC has adopted an approach focusing more on future early-stage R&D efforts and incentives to innovate more generally, due to the potential for the competing innovation efforts of the two firms to cannibalise each other post-merger. This essentially extends the standard unilateral effects framework used to assess price effects to innovation, and does not focus on specific product markets as the R&D is at too early a stage for product markets to be identifiable.

The broadest application of this latter approach is the EC's 2017 assessment of the Dow/Dupont merger,[27] in which the EC explicitly applied the unilateral effects framework to innovation to determine the impact of the merger on early-stage lines of research and pipeline products, which it defined as "innovation spaces". The Commission found that the merger was likely to have an immediate impact on the parties' existing innovation efforts, a longer-term impact on the incentives of the merged firm to develop new products, but also lead to a significant loss of effective innovation competition in the industry as a whole. Again, while this has not yet been applied in the digital context, it may signal the approach the Commission will take in such cases.

27. EC decision, Dow/Dupont. https://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=2_M_7932.

The EC's approach is not without controversy, and there is considerable debate in the literature about whether the unilateral effects framework can be readily transposed to innovation. (Petit, 2019) notes that innovation costs are 'lumpy' in the sense that they cannot be increased or decreased as easily or smoothly in the short term as marginal variables such prices or outputs. He notes that in practice, decreasing innovation may involve divesting capital and/or re-directing or making redundant R&D labour, which takes time, and therefore he queries whether the unilateral effects test is well suited to assessing innovation impacts. The author and (Jung and Sinclair, 2019) also question an underlying assumption of the unilateral effects test as applied to innovation, being that a reduction in the quantity of innovation (which has been measured using variables such as R&D expenditure, headcount and patents) must have a negative outcome. Indeed, the merger may give rise to efficiencies though the removal of genuine duplicate R&D efforts.

The application of the unilateral effects test is further complicated by the qualitative nature of innovation, which means it cannot be measured as cleanly as price. As an example, (Jung and Sinclair, 2019) contrast "breakthrough innovation", such as the creation of a new product or service, with 'incremental innovation', such as streamlining a process, the former being easier to detect and measure.

Other experts are more bullish about the use of innovation theories of harm in digital markets, including the suitability of the Dow/Dupont approach. (Bourreau and de Steel, 2019) note that given the significance of innovation in the digital sector, competition authorities should consider the impact on innovation directly and that there are sufficiently robust tools and theories at their disposal to do so, including the innovation markets approach. While observing that this exercise may be more challenging in the digital sector than other sectors such as pharmaceuticals, where innovation is more structured, they consider that authorities could define digital innovation markets with reference to inputs and capabilities such as data, some types of engineering skills, high computing power and very risky capital, noting that in highly dynamic sectors, capabilities are more stable than products (citing (Teece, 2009)). Similarly, in December 2022, the UK CMA's Chief Economist said that he considers that competition agencies have not taken innovation theories of harm seriously and have "dramatically undervalued" innovation in their assessment of mergers due to its inherent uncertainty.[28]

While not providing a definite view on this issue, it is relevant to note that limiting considerations of innovation to defined product markets has potential shortcomings. As described by (Kerber and Kern, 2014), firms competing within product markets may not be the same as those competing on innovation – some firms in the product market may not invest in R&D and some firms outside the product market might compete with the innovation efforts of the incumbent firm. It is therefore possible that an approach based on product

28. Enforcers have undervalued innovation, CMA chief economist says, 5 December 2022. https://globalcompetitionreview.com/article/enforcers-have-undervalued-innovation-cma-chief-economist-says.

markets may not fully or accurately capture relevant innovation competitors. This concern is not necessarily resolved by expanding the field of vision to include potential competitors in existing product markets or competitors in future product markets. Assuming authorities are concerned about the impact on innovation competition in these markets (as opposed to future price competition), it will still require them to assess firms' innovation capabilities, which is what is proposed under more direct approaches in the first instance.

While it remains to be seen if and how innovation theories of harm will be successfully applied in digital merger cases, this is likely to remain a topic of debate going forward. The Dow/Dupont decision suggests that the EC at least may take a more expansive approach, looking well beyond the immediate impact on specific product markets to consider broader industry effects.

3.5 Concluding remarks

Two themes emerge from the new theories of harm proposed in the literature, which, as previously mentioned, could generally also be viewed as adaptations to or expansions of existing theories to reflect digital market characteristics.

The first, is a desire for authorities to look beyond the immediate relevant product markets to consider the broader impact on the acquirer's ecosystem and the flow-on effects to other products markets, including through the accumulation of data. There is also an acknowledgment that the current timeframes used to consider the impacts of mergers may not be sufficient to properly assess these broader impacts, although not all agree that is appropriate or realistic for authorities to seek to predict outcomes over longer timeframes. In respect of the question of whether such an approach is new, ecosystem theories of harm could be viewed as adaptations of portfolio effect theories of harm (referred to in paragraph 76). Portfolio effect theories have already been used by the EC to assess mergers in more traditional industries and the FTC has signalled that they are likely to play a role in their assessments going forward (McHugh, Marquardt and Thompson, 2022). In the digital context, the potential harms arising from such theories are likely to be magnified due the characteristics of digital markets described previously.

The second is a move towards a greater focus on non-price parameters of competition, including privacy and innovation. These may indeed be more relevant in the digital context, which often involves the provision of (innovative) zero-price products and services to consumers. It is accepted that merger assessments can and should factor in non-price competition parameters where relevant, however digital mergers have raised questions around the degree to which such considerations should take primacy over price and more traditional notions of quality. There also remains significant debate around the appropriate mechanism for incorporating innovation into merger assessments more generally, particularly following the more novel approach taken by the EC in Dow/Dupont.

4. The way forward

Faced with the unique challenges of digital mergers, competition authorities worldwide are likely to encounter a trade-off between the potential advantages of using 'new' theories and the risk of moving too far off the beaten track and being rejected in court. Moreover, they could face criticism (warranted or not) that they are not providing sufficient certainty to business. As can be seen from previous chapters, when assessing mergers in new innovative markets, authorities may need to use more complex and/or speculative theories, incorporate additional elements of uncertainty into existing theories, and/or simultaneously consider a potentially large number of different but interrelated theories, to reflect the real sources of harm to competition. However, the development of the theory of harm is only one step, albeit critical, in the competitive assessment of mergers.

The suitability of a theory of harm and its success is ultimately determined by its ability to meet the substantive legal test, which varies across jurisdictions, but similarly requires competition authorities to prove that the transaction would "significantly impede effective competition"[29] or lead (or will likely lead or be expected to lead) to a "substantial lessening of competition".[30] Substantive tests generally take into account elements of capability, likelihood, certainty, answering the question of "what level of harm is required for a conduct to be deemed unlawful". Equally important for merger control is the standard of proof, which addresses the issue of "what level of evidence is sufficient for an allegation to be accepted as *true* in the eyes of the law?" (Kalintiri, 2020). For example, some authorities are required to prove their case on the 'balance of probabilities'[31] (i.e. more likely than not). Thus, competition authorities are strongly constrained when it comes to the development of new, and even more so speculative, theories of harm, as they must ensure the theory of harm adopted, and the evidence relied on to support it, enables them to reach these thresholds and make lawful decisions. As noted in section 2, the Bundeskartallamt appeared to view the burden of proof as an insurmountable obstacle to pursuing its ecosystem theory of harm in its review of the Meta/Kustomer merger.

There have been various proposals for amendments to competition tests and standards of proof. In the US, (Stigler Centre for the Study of the Economy and the State, 2019) proposed a reversing of the burden of proof for mergers between dominant firms and 'substantial competitors or uniquely likely future competitors', but the recommendation has also not moved forward. In the UK, the Digital Competition Expert Panel recommended changing the substantive test to allow the CMA to assess digital mergers using a 'balance of harms'

29. See for example, Article 2 of the Council Regulation (EC) No 139/2004 on the Control of Concentrations Between Undertakings.
30. See for example, section 50 of the Competition and Consumer Act 2010 in Australia; section 7 of the Clayton Act in the US; sections 22 and 33 of the Enterprise Act 2002 in the UK.
31. For example, section 2.35 of the CMA Merger Assessment Guidelines; see also https://www.whitecase.com/insight-alert/ecj-advocate-general-recommends-setting-aside-ck-telecoms-judgment-and-endorsing in relation to the EU practice.

approach, as an alternative to needing to demonstrate a substantial lessening of competition on the balance of probabilities (Digital Competition Expert Panel, 2019). The CMA did not support this proposal, and instead recommended a shift in the standard of proof required for the CMA to undertake Phase 2 mergers assessments from the existing 'balance of probabilities' to a "realistic prospect" threshold, while maintaining the overarching 'substantial lessening of competition' test (CMA Digital Markets Taskforce, 2020). Ultimately, it appears that neither of these proposals will form part of proposed legislative amendments.[32]

There is of course opposition to such proposals. (Cabral, 2021) considers that while reversing the burden of proof would result in the cancellation of some anti-competitive mergers, it would come at significant cost to innovation and efficiency gains. Similar arguments are made by (Jung and Sinclair, 2019), who also agree with the CMA's reasons for opposing the change to its substantive test.

With all these factors at play, and without robust and consistent ex post evaluations, it is impossible to determine if the reason why so many mergers have been cleared reflect the fact that these mergers were indeed not anticompetitive, or the theories used were not able to fully capture competitive harm in complex digital markets, or if regardless of how well developed a theory of harm might be the current competition tests and/or standards of proof are not fit for the digital age. Two recent studies have carried out such an ex-post evaluation (Lear, 2019), or a comprehensive analysis of theories of harm used (Robertson, 2022), with both concluding that there is room for improvement in the development and application of theories of harm for digital mergers within existing merger frameworks.

(Lear, 2019) determined that there were gaps in the UK competition authorities' analysis of digital mergers but fell short of concluding that this necessarily resulted in competitive harm in all cases. They determined that UK authorities had placed insufficient focus on the non-consumer side of two-sided markets, stressing that "all sides of a market need to be looked at jointly, as choices made by the platform on them are interdependent" and that moving forward theories of harm should be developed with a more thorough understanding and consideration of platform monetisation strategies. In particular, they suggest authorities develop a better understanding of online advertising markets, as these are, crucially, often the way digital serviced are monetised. They also acknowledged the constraints posed by the current notification thresholds and standards of proof, but considered that authorities should be willing to push forward with more speculative cases, including less certain counterfactuals, to test the boundaries of the legal tests.

Similarly, (Robertson, 2022) concluded that by sticking largely to traditional theories of harm, authorities have risked overlooking or underestimating competition concerns in dynamic markets. The author recommended that theories of harm be framed to better incorporate

32. A new pro-competition regime for digital markets - government response to consultation - GOV.UK (www.gov.uk).

ecosystem effects and that authorities develop a more coherent approach to assessing the role of data in digital mergers by consolidating the various approaches that have been used date. While not addressing specific potential improvements to other aspects of merger control, the author notes that "a lot can be done" within existing European merger laws. The ex-post reviews and analyses conducted to date therefore indicate that authorities can and should strive to further adapt theories of harm to better reflect digital market dynamics, despite the existence of other constraints and the fact that their assessments may ultimately be tested in court.

Some authorities are already shifting their practices in that direction. For example, the CMA's revised merger guidelines released in 2021 anticipate the CMA tolerating a higher threshold of uncertainty in its assessment of mergers involving digital platforms, with an increased focus on potential and dynamic competition, as well as conglomerate mergers more generally (box 9). This approach has arguably already played out in its decision to prohibit the Meta/Giphy merger (box 2).

Box 9. Updated CMA Merger Assessment Guidelines

In March 2021 the CMA released its updated merger assessment guidelines,[a] developed to improve the CMA's approach to assessing digital mergers. As noted by Olsen and Schwarz (2022), the amendments appear designed to give the CMA greater flexibility in its merger assessments.

For example, in providing context around what will constitute a SLC, the guidelines clarify that the CMA will not apply any numerical thresholds to determine whether a loss of competition is substantial (previous reference to specific numerical thresholds such as those under the Herfindahl-Hirschman Index have been removed). They also make clear that both price and non-price aspects of competition are important and that, in some circumstances, non-price competition may be the primary focus, including when consumers do not pay a monetary price for digital services. Noting that 'quality' should be interpreted broadly, they provide a non-exhaustive list of non-price aspects, which relevantly includes the level of privacy offered to users of digital services and the ability to enjoy content without being served advertisements. They also state that innovation will play a key role in some investigations.

The guidelines make explicit that the existence of uncertainty in how a market will develop does not, by itself, reduce the likelihood that a merger could give rise to competition concerns. This point is re-emphasised in relation to the development of counterfactuals, making clear that uncertainty about the future will not, it itself, lead the CMA to assume the pre-merger situation is the appropriate counterfactual. At the same time, the role of market definition has been de-emphasised, with the CMA anticipating placing more weight on the competitive assessment over static market definition and not needing to precisely define market boundaries as part of its assessment.

Olsen and Schwarz (2022) note that the guidelines appear to establish a low evidential threshold for the CMA determining that a firm is a potential or dynamic competitor. For example, in a merger involving an incumbent firm with a strong position and few competitors, the CMA may be concerned about the acquisition of even a small potential entrant leading only to an incremental increase in market power. In respect of an acquisition of a dynamic competitor, the CMA may be

concerned even where entry is unlikely and may ultimately be unsuccessful, because even the removal of the threat of entry may significantly impact innovation efforts by other firms.

The guidelines expand on certain market characteristics that may affect the CMA's approach which are likely to be relevant to digital mergers. For example, in relation to mergers involving two-sided platforms, the guidelines outline the heightened potential for competition concerns where network effects exist. In relation to vertical effects, the guidelines reference various potential digital-related forms of input foreclosure, including interoperability degradation, shutting down APIs and limiting access to data. In respect of conglomerate effects, the guidelines explicitly state that such concerns "may be greatest in nascent and digital markets, as new customers may be more easily diverted between firms, scaling particularly critical, competitors more easily marginalised, and the future benefits of controlling these markets especially large".

Overall, the guidelines anticipate the CMA tolerating a higher threshold of uncertainty in digital merger assessments. They position the CMA to take a more active interest in mergers involving potential or dynamic competitors, as well as conglomerate mergers more generally, and to consider impacts over a longer-term horizon. It is apparent that the CMA will continue to de-emphasise market definition in digital mergers, where market boundaries are often dynamic and less clearly delineated.

Source: Olsen, G. and D. Schwarz (2022). "The CMA's Revised Merger Assessment Guidleines – Interesting Times and Creative Energy", *Journal of European Competition Law & Practice,* vol. 13/1. https://academic.oup.com/jeclap/article/13/1/35/6380448.

[a] CMA Merger Assessment Guidelines, 18 March 2021, Updated CMA Merger Assessment Guidelines published - GOV.UK (www.gov.uk).

The FTC and DoJ are also recalibrating their approach. In September 2021 the FTC withdrew its vertical merger assessment guidelines[33] which were only published the year prior, and together with the DoJ, launched a public inquiry into merger guidelines aimed at 'strengthening enforcement against illegal mergers'.[34] They sought public comment on a number of specific areas, including relevantly "whether distinctions between horizontal and vertical transactions reflected in the guidelines should be revisited in light of trends in the modern economy", threats to potential and nascent competition, and information on how to account for the unique characteristics of digital markets which are not currently addressed in the merger guidelines. More recently, in the 2023 joint DoJ-FTC Spring Enforcer's Summit, DoJ Assistant Attorney General Jonathan Kanter "discussed the need for antitrust enforcers to account for competitive relationships that don't fall neatly into a vertical or horizontal category" noting the existence of "platforms that are multi-dimensional" and highlighting the risk of "gatekeeper power" (Fortes and Kowarski, 2023; Kowarski, 2023).

The ACCC, Bundeskartallamt and CMA released a joint statement in 2021 which also foreshadowed a greater willingness to accommodate uncertainty in future market

33. Federal Trade Commission Withdraws Vertical Merger Guidelines and Commentary | Federal Trade Commission (ftc.gov).
34. Federal Trade Commission and Justice Department Seek to Strengthen Enforcement Against Illegal Mergers | Federal Trade Commission (ftc.gov).

developments into their merger assessments, with specific reference to the high potential for competitive harm in technology markets. It states "uncertainty as to the future should not necessarily mean that potentially anticompetitive mergers are cleared because of that uncertainty: a seemingly small transaction can cause a competitive market to tip in an anticompetitive direction. For example, an acquisition of a small start-up could in reality be the acquisition of what would have been a major competitive threat to the purchaser in the longer term". Further, as part of its proposal for a broad suite of changes to its current merger regime, the ACCC is pushing for the inclusion of new factors that must be taken into account when considering whether the transaction is likely to substantially lessen competition which will be relevant for its assessment of digital mergers. These include whether the merger will lead to a loss of actual or potential competitive rivalry and/or 'increased access to, or control of, data, technology or other significant assets'.[35] While not merger specific, the ACCC is also undertaking an inquiry into expanding digital ecosystems as part of its five-year digital platform services inquiry.[36] The inquiry notes the significant number of acquisitions that have contributed to ecosystem expansion and will explore the extent of any anti-competitive conduct arising from it.

If authorities do indeed push forward with novel theories of harm and/or theories incorporating a higher degree of uncertainty, and more deals are blocked as a result, courts will likely have to step in as final arbiters of a greater number of digital merger disputes, as discussed below.

4.1 The role of courts

To date, courts have had very limited scope to weigh in on theories of harm in digital mergers, given authorities' assessments have so rarely resulted in a prohibition decision. However, there are a few cases which are instructive as to the potential significance of the courts' role in shaping digital merger practice going forward. Indeed, with an enhanced role, the approach of the court and the outcomes of such disputes may ultimately be an important consideration in jurisdictions' assessments of whether their existing merger frameworks are suitable for assessing digital mergers or whether some or further reforms are needed.

Given the global nature of large digital ecosystems, it may become increasingly common for multiple jurisdictions to arrive at different outcomes when reviewing a merger. This may result from courts and tribunals in different jurisdictions taking a different view of similar theories of harm and factual circumstances, or it may be due to a merger having differing impacts due to the different local market conditions and dynamics. For example, courts in

35. https://www.accc.gov.au/about-us/media/speeches/the-role-of-the-accc-and-competition-in-a-transitioning-economy-address-to-the-national-press-club-2023.
36. https://www.accc.gov.au/focus-areas/inquiries-ongoing/digital-platform-services-inquiry-2020-25/september-2023-interim-report.

the UK and Austria came to different conclusions in respect of similar theories of harm raised by the competition authorities in their assessment of the Meta/Giphy merger.

In the UK, the Competition Appeal Tribunal's decision to substantively uphold the CMA's order requiring Meta to divest Giphy was a landmark ruling for the regulator. It no doubt gave the CMA added confidence in its revised merger guidelines, which were freshly published at the time of its Phase 2 investigation and marked the first time globally that Big Tech has been required to unwind such a deal.

As noted in Chapter 3, a horizontal theory of harm considered by the CMA was whether an innovative online advertising service that Giphy was already providing in the US had the potential to effectively compete against Facebook's display advertising services in the UK. Significantly for the CMA, the Tribunal upheld the CMA's finding that the merger was unlawful because it eliminated an important form of dynamic competition. While Meta accepted conceptually that a weakening of dynamic competition could amount to a substantial lessening of competition, it argued that the CMA had essentially ignored the statutory test and made its finding purely on the basis that dynamic competition existed in the market.

In its judgment, the Tribunal noted that the concept of dynamic competition is 'slippery'' and that "there is no established framework for assessing an impairment to dynamic competition". It therefore set out what it considered to be the relevant factors for determining if there has been a sufficiently significant impairment to dynamic competition and cross checked these against the CMA's decision.[37] Ultimately the Tribunal commended the CMA's approach, confidently concluding that the CMA's decision was lawful.[38] However, it also provided additional guidance, which we might expect to see reflected in future CMA decisions which involve a dynamic competitive element, being that the CMA should actively consider not only the "disbenefits" of the merger but also what would be the "disbenefits of intervention" in circumstances where the CMA's assessment of the impairment to dynamic competition is wrong.

In contrast, the Austrian Cartel Court, following a request by the Austrian Federal Competition Authority, also considered a horizontal theory of harm related to Giphy's potential to compete as a provider of display advertising services, but concluded that it did not raise concerns.

In other single-jurisdiction mergers, it may be that courts are less willing to accept more novel theories of harm and/or will otherwise take a stricter approach than the authority. For example, in February 2023 the Norwegian Supreme Court[39] quashed a decision by the

37. These included the state of static and potential competition and the likelihood of the identified dynamic element manifesting, with reference to the motivations of the parties, the market value of the dynamic element, the contestability of the market and the potential for monetization.
38. As this was a judicial review the decision was not reviewed on its merits.
39. https://www.domstol.no/en/supremecourt/rulings/rulings-20232/supreme-court---civil-cases/HR-2023-299-A/.

Norwegian Competition Authority to prohibit the acquisition by Schibsted, which operates a traditional classified ads-based online sales platform called Finn.oo, of Nettbil, an innovative new entrant in online car sales which provides a comprehensive online service to facilitate the car sales from consumers to car dealerships and assumes the risk of such sales. The acquisition was not notified prior to closing as it did not meet Norway's notification thresholds, but it was called in by the authority after the fact. The authority determined that the merger would further increase Schibsets's market power leading to higher prices and reduced innovation, and that in the absence of the merger, Nettbill would have continued to grow and expose Finn.oo to increasing competitive pressure.[40] The authority's decision was upheld by the Competition Appeals Board, but was later overturned by the Gulating Court of Appeal, with whom the Supreme Court ultimately agreed. It is the first time a merger decision has been reviewed by Norwegian Courts and it has important implications.

As outlined by (Jorkjend and Vesterkjaer, 2023) the Supreme Court found that that neither the authority nor the Competition Appeals Board had established that the firms' services are in the same product market. Also, while this did not ultimately need to be determined, the Court confirmed that there is a high threshold for a finding of a significant impediment to competition, rejecting the authority's view that the impediment only needed to 'large enough' to affect competition (i.e. not trivial or "de minimis"). The Court also rejected the authority's finding that the merger would harm innovation, because in the Court's view there was no evidence that in the absence of the merger, either party would have developed a service that competed more directly with the others'. While this matter did not involve particularly novel theories of harm, in the context of digital mergers it suggests the Court will take a strict approach to assessing market definition and the assessment of whether products are substitutable and will require a high degree of certainty for a finding that a merger significantly impedes competition.

5. Conclusion

It appears unlikely that a single cause is behind the perceived underenforcement of digital mergers. The well-known limitations of notification thresholds mean that many digital mergers have avoided any scrutiny at all, and the fast-moving, dynamic nature of digital markets may make it difficult for competition authorities to predict future outcomes with the required level of certainty to satisfy legal tests.

That said, it appears that to date competition authorities have mostly relied on traditional theories of harm when assessing digital mergers, albeit adapted to differing extents to account for the specific features of digital markets. The question is whether this has been

40. Norwegian Competition Authority decision, Schibsted AS/Nettbil AS. https://konkurransetilsynet.no/decisions/vedtak-v2020-31-schibsted-asa-nettbil-as-konkurranseloven-%c2%a7-16-jf-%c2%a7-20-inngrep-mot-foretakssammenslutning/.

sufficient to capture the full picture of competitive harms arising from digital mergers. The ex-post analysis conducted to date suggests that it is not, and that there is scope to further adapt existing theories and adopt 'new' or at least more novel theories.

Drawing from these analyses and the proposals in the literature, authorities could seek to more consistently develop theories that account for the impact of a merger on the acquirer's broader ecosystem of products/services, expanding the scope of their assessment beyond the specific product markets the focus of the merger. This should also encompass deeper consideration of the various ways data can be employed, both as an input into specific products and services, but also as an additional source to feed into an existing store of Big Data that can be leveraged at different points within the ecosystem, particularly online advertising.

In addition, when developing theories it may be appropriate for authorities to place less emphasis on the demarcations between horizontal, conglomerate and vertical effects, given the distinctions between complementary and substitutable products are not always clearcut in digital markets and in any event can change quickly. This is especially the case if authorities shift their focus away from existing competition and towards potential competition. Further, even if products do not appear to directly compete from a consumers' perspective, it may be that they more clearly do once their monetisation strategies are considered. In such cases, excluding horizontal considerations from the assessment risks missing or understating potential competitive harm.

Authorities can also continue to increase their focus on non-price parameters of competition and take a more expansive view of notions of quality. For example, as noted in section 2, there are options for incorporating harms to privacy into merger assessments that account for the differing values consumers ascribe to it. The revised CMA merger guidelines also contemplate more digital-specific forms of quality degradation, such as the ability to enjoy content without being served advertisements.

In respect of innovation, while it is uncontroversial that it may be a relevant factor to be considered in digital mergers assessments, there remains considerable debate about how it should be incorporated into such assessments generally, including whether the assessment needs to be linked to specific product markets.

This paper concludes that there is scope for, and utility in competition authorities working to further adapt theories of harm in digital merger assessments, as well as exploring more novel theories such as those outlined in this paper, to more fully capture competitive harms in these unique markets.

Such an approach will inevitably require competition authorities to incorporate a higher degree of uncertainty into their assessments. As previously noted, (Cabral, 2021) argues that merger control is an inefficient mechanism for curbing the power of large digital platforms, including because it is not possible to make accurate long-term predictions about

digital industries due to the rapid pace of innovation. He therefore considers that ex-post remedies should be the primary means of addressing competitive harms in digital markets. However, ex-post interventions take place either after the harm has occurred or at least after the wheels have been set in motion and remedies can take a long time to come to fruition. This is especially significant in the context of fast-moving digital markets prone to tipping. It is therefore debateable how effectively ex-post remedies can unwind or prevent competitive harm in these sectors. As such, short of almost never intervening in digital mergers, it seems apparent that competition authorities will need to adapt their approach to accommodate the inherent uncertainties of these markets.

In terms of the likelihood of a more interventionist approach to digital mergers withstanding judicial scrutiny, the case law is clearly too limited at this point to seek to discern clear trends. However, there are already hints that some jurisdictions may face challenges. This may be linked not only to the use of less conventional theories of harm, but also the ability to meet legal thresholds when additional elements of uncertainty are incorporated into more traditional theories of harm.

As such, an area for potential future research is the interaction between the development and application of 'digital' theories of harm, including the use of potentially less certain counterfactuals, and standards of proof and substantive tests. This could include further consideration of alternative proposals that have been put forward, such as the 'balance of harms' competition test, less stringent standards of proof, and even the reversing the burden of proof in certain circumstances.

In addition, further digital-specific ex-post evaluation of merger assessments would no doubt be valuable, including an assessment of the effectiveness of remedies put in place to date. The utility of such an exercise has been demonstrated in the UK, where the recommendations proposed by (Lear, 2019) were stated to be a basis for the CMA's revised merger guidelines and appear to be reflected in the CMA's use of more novel, digital-market focused theories of harm in the Meta/Giphy and Microsoft/Activision decisions, the latter of which could arguably be characterised as an ecosystem theory of harm.

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