



# The EU Digital Markets Act

## A Report from a Panel of Economic Experts

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The mandate of the Panel was to produce an economic opinion on the European Commission proposal for a Digital Markets Act (DMA), based on existing economic research and evidence.

The members of the Panel are well-known economists with a strong track-record in economic research on digital platforms and competition policy.

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This report expresses the views and opinions of the Panel members only. They do not necessarily reflect the views and opinions of the JRC or the European Commission. The Panel members acknowledge that the lack of diversity in the composition of the Panel may have affected the views expressed in this report.

## **Executive Summary**

The Panel is in broad agreement with the vision encapsulated in the Digital Markets Act (DMA). Many important details are still open to discussion, and this report offers economic arguments that can make the DMA stronger when dealing with large and dominant digital platforms.

**Gatekeepers and their obligations.** The traditional competition policy approach based on (i) market definition, (ii) assessment of market power and (iii) design, if necessary, of adequate remedies, is difficult and too slow to implement in the digital space. In this context, the Panel agrees that absolute size thresholds in the Commission's approach to defining a gatekeeper, and the quasi-automatic imposition of gatekeeper obligations, make more sense. Moreover, some vagueness in the definition of platforms and operating systems may be a necessary cost to allow the Commission some flexibility.

The Panel proposes a refinement of the Commission's two-pronged approach to regulation (Articles 5 and 6). The idea is to create (a) a black list of forbidden behaviours to which only extreme considerations would justify an exception; and (b) a grey list of practices which are in principle considered anti-competitive but for which a pro-competitive justification is possible, with the gatekeeper bearing the burden of proof for that efficiency defence.

**Tying, bundling, and self-preferencing.** The Panel proposes that self-preferencing be considered illegal (i.e., black listed), whereas tying and bundling be included in the set of presumed anti-competitive practices for which gatekeepers can present an efficiency defence (e.g., grey list practices).

**Advertising.** Online targeted advertising is a very concentrated market that is also very opaque. Articles 5(g) and 6(f) focus on transparency, which is certainly very helpful. However these articles do not seem to focus enough neither on structural problems (e.g. several layers of the "open display" ad tech chain), nor on behavioural features such as exclusive distribution of inventory through one's own tech stack or limiting interoperability with rival tech intermediaries.

**App stores.** App stores generate value by providing a venue where supply and demand can meet to transact. In addition, they can provide quality and security assurance as well as a better user experience. However, prices that app stores are able to charge suggest they are able to capture supra-normal shares of transaction revenues. In particular, app stores capture aftermarket revenues including renewal fees. These high prices are the direct result of customer and supplier lock-in; once consumers choose a platform, there are no realistic alternatives for multi-homing. Notably, regulations can foster competition or engage in direct price control. The challenge with competition, however, is that the benefits of a highly liquid market of high-quality applications might be lost. To address potential consumer harm, the Panel endorses the relevant obligations, as they apply to app stores, contained in Articles 5 and 6. For example, Article 5(b) allows business users to promote offers to end users outside the core platform service, and Article 5(c) allows end users to access content, subscriptions and other features through other channels than the core platform services of the gatekeeper.

**Data sharing.** The DMA imposes data sharing obligations in order to reduce gatekeepers' exclusive control over the data they collect. These obligations seek to eliminate market distortions inside the platform, including self-preferencing and information asymmetries between the platform and its business users, as well as distortions between competing platforms. All of the remedies entail trade-offs between costs and benefits of data-driven network effects. Many involve providing users with a right to download their data. Because data portability runs into a number of technical, legal and economic obstacles, the Panel explores an alternative to data portability which would be to grant individuals in-situ rights to access end user data. The obligations that grant business users access to their own interaction data with end users imply that gatekeepers are still the unique beneficiary of the social value of the insights generated through economies of scale and scope in data aggregation across businesses and end users. The Panel notes that requiring a more detailed disclosure would put the platform's entire business user activity dataset in the public domain. Alternatively, the data could be shared after some degree of aggregation and masking. The cost of such pooling is a reduction in the value of the data.

**Mergers and acquisitions.** Acquisitions of small firms by large gatekeepers may serve different purposes, including pre-empting a potential competitor (anti-competitive effect) and complementing an existing asset with a new product (pro-competitive effect). There are also important effects on innovation, both innovation by new start-ups and by the incumbent gatekeepers. This variety of situations, which is illustrated by the extensive list of GAFAM (Google, Apple, Facebook, Amazon, and Microsoft) acquisitions since 2000, suggests that merger policy is a complex issue. One thing however seems clear: the traditional criteria for reviewing

and deciding on a merger have little bite in the digital space. The Panel notes that, apart from the obligation to notify any mergers, the DMA says very little about mergers initiated by gatekeepers.

**Enforcement.** Information asymmetries between competition authorities and firms typically concern all three steps of a classical competition case analysis: market definition, firm conduct, and remedies. The DMA policy proposal addresses this information gap by replacing the traditional, often time consuming three-step competition law procedure, by one single step. Once simple threshold values on turnover and user numbers are used to designate a platform as a gatekeeper, all of the obligations of Articles 5 and 6 apply to the gatekeeper, with very limited exemptions provided in Articles 8 and 9. Hence, for the Commission there is no need anymore (i) to study user substitution patterns in order to delineate markets, (ii) to analyse the effects of a firm's particular conduct or its purpose, and (iii) to design appropriate remedies. This significantly reduces the information requirements for the Commission. Hence, the proposed DMA will significantly reduce the Commission's information disadvantage, as the designation of gatekeepers requires limited and easily verifiable information only and remedies or obligations will be imposed quasi-automatically.

With respect to compliance the DMA includes several investigative powers for the Commission, most notably on-site inspections with access to data and algorithms. In addition, Article 24 appears to provide rather broad powers to the Commission to undertake "the necessary actions to monitor the effective implementation and compliance with the obligations", including the appointment of external experts and auditors. The Panel suggests that this may include embedding rotating auditing teams within the platforms that may conduct behavioural experiments to evaluate the algorithm and use of the data.

**Fairness.** The Panel generally agrees with the FRAND provisions of the DMA, but notes that the precise definitions of fairness and the means to measure it have not been provided. Operationalising FRAND access might be attained or improved by legal and technical separation of vertical services on top of a platform from the infrastructure at the bottom in which equivalent terms of access are published and adhered to both by the platform as gatekeeper and third-party producers. Access to markets and access to market data can then be made symmetric for producers and gatekeepers alike. As a measure of success, the traditional consumer welfare standard used in Europe and the US may not be adequate as it assumes a two-party bilateral exchange. By contrast, gatekeepers mediate a three-party trilateral exchange. The latter offers the possibility to exploit one side of a market and subsidise another, suggesting a more balanced producer and consumer welfare standard is warranted. Measurement might then proceed by identifying several forms of harm and using choice experiments to assess values more precisely.

## **Abstract**

Over the last years, several reports highlighted the market power of very large online platforms that are gatekeeping intermediaries between businesses and consumers, and the difficulty for classic competition policy tools to deal effectively with anti-competitive practices in these platforms. In response to this, the European Commission recently published a proposal for a Digital Markets Act (DMA) to complement existing competition policy tools by means of ex-ante obligations for platforms. This report presents an independent economic opinion on the DMA, from a high-level Panel of Economic Experts, established by the JRC and based on existing economic research and evidence. The Panel endorses the vision encapsulated in the DMA, including the designation of large gatekeeper platforms and a series of ex-ante obligations they should comply with. The Panel points out the challenge of striking a balance between the benefits from network effects of large platforms and the potential negative effects from anti-competitive behaviour and winner-takes-all market forces in online services. While some types of anti-competitive behaviour are well-known from classic competition cases, data-driven multi-sided platforms have found new ways of tying, bundling and self-preferencing that present new challenges. The report explores these behaviours in specific settings, including in online advertising and mobile ecosystems. It discusses ways to use valuable data gathered by platforms for pro-competitive purposes and the wider benefit of society in order to achieve a higher standard of fairness in the distribution of the social value generated by large platforms. Information asymmetry between platforms and regulators remains an issue in the effective implementation of the obligations.

## 1 Introduction

On 15 December 2020, the European Commission published a proposal for a Regulation to ensure fair and contestable Digital Markets<sup>1</sup>. This new policy tool aims to address the challenges posed by large online platforms with significant network effects that act as gatekeepers in the digital economy<sup>2</sup>:

*"There is wide consensus concerning the benefits for consumers and innovation, and a wide-range of efficiencies, brought about by online platforms in the European Union's internal market. However, while over 10 000 such online platforms operate in Europe's digital economy, and most of these are SMEs, a small number of very large online platform companies capture the biggest shares of the value. As gatekeepers between businesses and citizens they benefit from strong network effects. Some of these exercise control over whole platform ecosystems that are essentially impossible to contest by existing or new market operators, irrespective of how innovative and efficient they may be."*

Several reports<sup>3</sup> have highlighted the economic power of very large online platforms that are gatekeepers for many businesses and consumers to access the digital economy. They are online intermediaries that bring together people or undertakings looking for information, transactions and social interaction: buyers, sellers, advertisers, software producers and users, ancillary service providers, etc. Intermediary platforms come with a number of economic characteristics that distinguish them from traditional firms<sup>4</sup>. They are "inverted" firms<sup>5</sup> that have access to very large datasets. They can bundle a broad range of digital services into a seamless data-driven offer that enables them to expand their reach into adjacent markets. The combination of economies of scale and scope, network effects, zero pricing, consumer behavioural biases, create new market dynamics with sudden radical decreases in competition ('tipping') and concentration of economic power around a few 'winner-takes-it-all/most' online platforms. Smaller businesses are increasingly dependent on a few very large online platforms to access digital markets and consumers. Innovative digital firms and start-ups find it difficult to compete with these very large online platforms. Their impact is compounded by the opacity and complexity of their large ecosystems, and the significant information advantage they have over business users.

We (the Panel) agree with the consensus that has emerged over the last years that existing ex-post competition and regulatory tools are insufficient to address the challenges of digital platforms, for several reasons. Competition policy procedures are slow compared to the pace of change in the digital economy. Remedies may be insufficient and outdated to deal with the challenges. It is difficult to "unscramble the eggs" and restore competition once harm is done. Classic competition policy focuses on abuse of dominance in a single relevant market. Platforms are often intermediaries between several markets. The rise of big data analytics has not only widened the information asymmetry between platforms and users but also between regulators and platforms. This in turn slows down regulatory responses to anti-competitive platform behaviour.

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<sup>1</sup> European Commission proposal for a Digital Markets Act, see [https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/digital-markets-act-ensuring-fair-and-open-digital-markets\\_en](https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/digital-markets-act-ensuring-fair-and-open-digital-markets_en)

<sup>2</sup> As announced in March 2020 in the Digital Services Act package – an ex ante regulatory instrument of very large online platforms acting as gatekeepers, Inception Impact Assessment available here: <https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12418-Digital-Services-Act-package-ex-ante-regulatory-instrument-of-very-large-online-platforms-acting-as-gatekeepers>

<sup>3</sup> Crémier, J., de Montjoye, Y. A. and Schweitzer, H., Competition Policy for the Digital Era, Publications Office of the European Union, Luxembourg, 2019, doi: 10.2763/407537; Furman, J., Coyle, D., Fletcher, A., McAuley, D. and Marsden, P., Unlocking Digital Competition. Report of the Digital Competition Expert Panel, HM Treasury Publications, London, 2019; Stigler Committee on Digital Platforms, Final Report, George Stigler Center for the study of the Economy and the State, University of Chicago Booth School of Business, Chicago, 2019; US House of Representatives Sub-Committee on Antitrust, Investigation of Competition in Digital Markets, Washington, 2020.

<sup>4</sup> The basic economic characteristics of platforms are discussed in Caillaud, B. and Jullien, B., Chicken and Egg: Competition among Intermediation Service Providers, The RAND Journal of Economics, Vol 34, No 2, 2003, pp. 309-328; Parker, G. and Van Alstyne, M., Two-Sided Network Effects: A Theory of Information Product Design, Management Science, Vol 51, No 10, 2005, pp. 1494-1504; Rochet, J. C. and Tirole, J., Two-sided markets: a progress report, Rand Journal of Economics, Vol 37, No 3, 2006, pp. 645-667.

<sup>5</sup> Parker, G., Van Alstyne, M. and Jiang, X., Platform ecosystems, how developers invert the firm, MIS Quarterly, Vol 41, No 1, 2017, pp. 255-266.

The DMA addresses these challenges<sup>6</sup> by granting specific market and data access rights to business users of very large gatekeeper platforms. It combines ex-ante regulatory provisions with tools that are associated with competition policy, such as acquisitions, market investigations and access to internal platform information. It by-passes relevant market and dominance considerations and directly addresses entry barriers in very large digital markets. It expands the investigative powers of the European Commission for effective enforcement of the regulation.

This report examines these questions from a dual economic perspective. On the one hand, platforms are an important source of social and economic welfare gains for all users. Users can benefit from network effects or positive externalities. An increase in the number of users, products and services on the same or on other sides of the market, gives them a wider variety of parties to interact with and makes it more likely that they find what they are looking for. Some users may get free access to the platform while others pay for access – for example advertisers. Because of network effects, users may still enjoy surplus benefits over and above their payment. Platforms monetise and internalise only part of the social value that they generate. Network effects in digital platforms are driven by economies of scale and scope in data re-use and data aggregation. They play a crucial role in increasing matching efficiency, reducing transaction costs for users and improving service quality. The social value of data often exceeds their private value<sup>7</sup>. Finding an optimal balance between openness and exclusion is difficult, also because data (access) rights are often poorly defined.

On the other hand, network effects can give rise to negative impacts on economic welfare and on consumers. They may lead to a winner-takes-all market whereby a single platform comes to dominate a market. High switching costs prevent multi-homing between competing platforms. Dominant platforms become hard-to-avoid monopolistic gatekeepers to online markets. Monopolistic market power in itself does not necessarily lead to market failure<sup>8</sup>. It does however when it is abused to reduce market access and appropriate a disproportionate part of the efficiency gains. It may increase prices and discourage entry and innovation by competitors. Network effects make it difficult to compete with platforms. High fixed set-up costs and low marginal running costs<sup>9</sup>, large scale data collection and exclusive control over these data, reinforce these entrenched monopolistic market positions. The platform may exploit this information asymmetry to compete unfairly with its users, promote its own goods and services, or foreclose parts of the markets for third-party users.

We consider that one of the main challenges in the implementation of the DMA is how to separate the positive efficiency and welfare gains that platforms generate through (data-driven) network effects from negative anti-competitive and welfare-reducing platform behaviour. Pro-competitive remedies should not undermine the efficiency gains of platforms. How can we preserve the wider societal benefits of network externalities while avoiding abuse of gatekeeper dominance? A related challenge is how to narrow the information gap between regulators and gatekeepers, so that regulators can more accurately distinguish between pro- and anti-competitive gatekeeper behaviour.

We make, at the outset, two important remarks. First, we are in broad agreement with the vision encapsulated in the DMA. We are also aware that the DMA is just the beginning of a journey that may take several years, before becoming law in practice. Terms will be debated, possibly fiercely, and important details that cannot be anticipated will change for sure. For these reasons, we will not comment too specifically on each article, while we prefer to stick to the economic analysis behind each one of them. This report is an opportunity to see each article through economic lenses. Second, our initial reading of the DMA suggests that it is not to be seen as an all-encompassing regulation of digital platforms. On the contrary, we have worked on the assumption that these regulations will apply de facto only to a handful of very large and dominant companies, some of which also have a history of abuse cases in Europe and elsewhere. Hence, while at times we will be able to make general economic considerations, in several places we will consider how the regulations should be considered in light of this much more selected pool of companies. Hence this report is not to be interpreted as a

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<sup>6</sup> An additional reason for the European Commission to take a regulatory initiative on this subject is the growing tendency among EU Member States to regulate these issues at national level. Harmonisation of the rules applicable to platforms would prevent regulatory fragmentation of the EU Digital Single Market.

<sup>7</sup> Bergemann, D. and Bonatti, A., The economics of social data: An introduction, Cowles Foundation Discussion Paper 2171, 2019.

<sup>8</sup> For an overview of market failures and other concerns that may justify regulatory intervention, see the European Commission's "Better Regulation Guidelines" [https://ec.europa.eu/info/law/law-making-process/planning-and-proposing-law/better-regulation-why-and-how/better-regulation-guidelines-and-toolbox\\_en](https://ec.europa.eu/info/law/law-making-process/planning-and-proposing-law/better-regulation-why-and-how/better-regulation-guidelines-and-toolbox_en)

<sup>9</sup> Iansiti, M. and Lakhani, K. R., Competing in the Age of AI: Strategy and Leadership When Algorithms and Networks Run the World, Harvard Business Review Press, Boston, 2020.

commentary on the economic regulation of digital platforms: such a general theory simply does not exist. Rather, our hope is to present useful economic arguments that can make the DMA stronger when dealing with large and dominant digital platforms.

The remainder of this report is structured as follows. Chapter 2 discusses the criteria for the designation of gatekeeper platforms. We then turn to the obligations that the DMA imposes on gatekeeper platforms. In Chapter 3 we discuss obligations related to tying, bundling and other obstacles to market entry. Chapter 4 and 5 focus on two particular types of gatekeepers, advertising platforms and app stores. Chapter 6 discusses data sharing obligations for gatekeeper platforms. Chapter 7 goes beyond static market power concerns and focuses on innovation dynamics, including the role of mergers and acquisitions and enduring market power. Chapter 8 examines how the DMA addresses the information asymmetry problem between platforms and regulators. Chapter 9 focuses on fairness in the distribution of benefits generated by platforms.

## **2 Gatekeeper platforms and their obligations**

### **2.1 The designation of gatekeepers**

The Digital Market Act (DMA) follows in the footsteps of the EU Platform-to-Business (P2B) Regulation, which took a first step towards improving transparency in the business environment of online platforms<sup>10</sup>. The P2B Regulation defines platforms as “online intermediation services” that constitute “information society services” and facilitate direct transactions between businesses and consumers, based on contractual relationships between business and platform.

To ensure regulatory consistency, the DMA builds on that definition and introduces additional criteria to identify a subset of very large gatekeeper platforms. Specifically, among other criteria Article 3 defines gatekeepers as core platform services that exceed a number of size thresholds, e.g., more than 45 million active monthly end users or more than 10,000 active yearly business users. These thresholds are designed to capture the largest online platforms, where potential harm is the greatest. Effectively, it comes down to the GAFAM tech giants (Google, Apple, Facebook, Amazon and Microsoft), possibly a few more. Large Chinese platforms still have insufficient foothold in the EU market to match the criteria. Smaller platforms that are gatekeepers in niche markets are also likely to be left out, although this is not completely clear at this point.

The traditional three-step competition policy procedure consists of, first, delineating the relevant market (i.e., identifying the firms that compete in a market), secondly, assessing the firms’ market power, and thirdly, designing, if necessary, appropriate remedies. By using absolute-size thresholds and quasi-automatically imposing obligations, the DMA opts for a one-step procedure which avoids the above steps. Considering how difficult it is to define relevant markets in the digital space, we believe that the DMA proposed criteria provide a good start. That said, we also recognise — and so does the DMA — that the absolute-size-threshold approach has its problems. Article 3 (6) of the DMA allows for the possibility of identifying a gatekeeper based on a variety of more qualitative factors, such as entry barriers from network effects and data advantages.

We add that, in the platform economics literature, entrenched market power is often measured by the extent and cost of multi-homing. More competition and substitution on one side of the platform market can reduce its market power on that side<sup>11</sup>. We suggest that the Commission could use objectively measurable proxies for this, including for example (a) dependence on referral traffic from major search engines, social media and advertising, and (b) the extent of multi-homing by users on each side of the market. For example, consumers can often easily multi-home between competing e-commerce or ride-sharing platforms. Switching costs for sellers on these platforms are also relatively low. By contrast, multi-homing between smartphone operating systems is costly for consumers (implies buying a new phone), while user benefits are low since most popular apps are available in the leading app stores of both operating systems. App developers incur additional upload costs because they need to be present in both stores. In this case, multi-homing by app developers does not reduce the app stores’ market power but is a result of competitive bottlenecks.

Article 3 defines two other concepts that may be important in the implementation and enforcement of the DMA: operating systems (OS) and ancillary services. Operating systems are defined as software that controls basic hardware or software functions and enables other software to run on it. Microsoft Windows, Google Android and Apple iOS are well-known OS. But, similar to “conventional” OS, pieces of software such as Microsoft Office365, Google Chrome and Facebook also allow developer plug-ins and extensions to run on top. Should they be considered as OS as well?

Ancillary services, in turn, are defined as complementary services provided together with the core platform service. For instance, e-commerce platforms can offer additional services such as payment, identification and advertising. This is potentially a very wide category of services that could cover many plug-ins and related services. Advertising is already identified as a core platform service, but it can also come as an ancillary service, which may be somewhat confusing.

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<sup>10</sup> Regulation EU 2019/1150 of the European Parliament and the Council on promoting fairness and transparency for business users of online intermediation services.

<sup>11</sup> Franck, J. U. and Peitz, M., Market definition and market power in the platform economy, CERRE report, Brussels, 2019. It is important though to distinguish between multi-homing on platforms that are complements (e.g., competitive bottlenecks), which does not reduce a platform’s market power on that market side, and multi-homing on competing platforms that are substitutes for users and, therefore, reduce the platform’s market power.

Given the difficulty in defining exactly what operating systems and ancillary services are, and given that the DMA clearly wants to facilitate competitive market entry for any type of add-on services to gatekeeper platforms, we believe the somewhat vague definitions adopted by the DMA have the advantage of allowing the regulator a much-needed degree of flexibility.

## 2.2 Gatekeeper obligations

The core of the DMA revolves around two sets of obligations for gatekeeper platforms, a quasi-automatic list of obligations (Article 5) and a list of obligations susceptible of further specification (Article 6). For example, Article 5 includes the obligation to allow business users to offer the same products or services to end users through third party online intermediation services; and the prohibition of requiring business users to use, offer or interoperate with an identification service of the gatekeeper in the context of services offered by the business users using the core platform services of that gatekeeper. Article 6, in turn, includes prohibitions such as treating more favourably in rankings products and services offered by the gatekeeper; or restricting the ability of end users to switch.

A key motivation for the DMA policy initiative is to speed up the implementation of remedies for anti-competitive behaviour by gatekeeper platforms. In particular, Article 5 achieves this by imposing ex-ante obligations or behavioural restrictions on all platforms that have been designated as gatekeeper platforms. These obligations apply without further investigations by the European Commission. There is neither burden of proof on the regulator's nor on the platform's side.

We note that there is no explicit efficiency defence clause for platforms against the quasi-automatic remedies of Article 5 (or Article 6, for that matter). The rationale is that such a clause may considerably slow down the regulatory process. As an exception to this rule, Article 8 allows for exemptions if the gatekeeper demonstrates that the obligation would endanger the “economic viability of the operation of the gatekeeper in the Union”. Article 9 allows platforms to submit a reasoned request to be exempted from specific obligations on grounds of public morality, health or security. The Commission can grant exemptions and take into account “the effects of the obligation on the gatekeeper and on third parties.” These provisions provide safety valves against excessively disruptive obligations. Regarding the implementation of obligations in Article 6, Article 7 grants gatekeepers an opportunity to explain why their policies “are effective in achieving the objective of the relevant obligation in the specific circumstances”.

Generally speaking, we agree with the idea of using ex-ante regulation as a means to avoid slow, protracted interventions. However, regulators should be careful to avoid an unfavourable trade-off between speed and quality of judgement. Moreover, by listing obligations “susceptible of being further specified”, Article 6 implies a degree of legal uncertainty. Article 7 will require further clarifications regarding the implementation modalities. This is unfortunate, especially considering that some of the obligations in question are potentially very disruptive, to a point that legal uncertainty may have a chilling effect on innovation. Starting with less ambitious proposals and providing more legal certainty to gatekeepers, with the possibility of widening the list when further experience has been gained, may be a more effective approach.

As an alternative to the DMA's two-pronged approach (Articles 5 and 6), we propose a different, though related approach. We recommend the creation of both “black” and “grey” lists of gatekeepers’ behaviours. The idea of a black list is that there are practices considered clearly anti-competitive and as such outlawed. This corresponds roughly to Article 5 of the DMA and the concept of per-se illegality in competition policy. Currently, Articles 5 and 6 of the DMA appear to group all of the practices mentioned into this type of black list that has to be complied with in any case. Exemptions are only granted under Articles 8 or 9, as mentioned earlier.

In contrast, the idea of a grey list — or dark grey list — is that some behaviours are presumed anti-competitive, and their acceptance by regulators depends on the interested parties showing the pro-competitive nature of the practice in the specific case in question. This corresponds roughly to the rule-of-reason approach in competition policy, with the added element of imposing the burden of proof on the platform under consideration. It would be, by and large, comparable to the framework the EU is currently using to address horizontal and vertical restraints of competition where the burden of proof for demonstrating efficiencies is with the concerned parties.

The current DMA framework does not envisage such a grey list, as there is no option for a “classical” efficiency defence (be it based on individual or on block exemptions). That said, there is some parallel between our grey list concept and the “possibility of a tailored application of some of the obligations through

a dialogue between the Commission and the gatekeepers concerned" (as stated in the DMA explanatory memorandum). In other words, the DMA seems in principle consistent with our proposal of a grey list of presumed anti-competitive practices which the platform must however justify. That said, it remains unclear which obligations the memorandum refers to, as well as how and what standards would apply in such a dialogue.

To summarise, in general terms we agree with the Commission's proposal that there be a combination of ex-ante and ex-post regulation, including lists of disallowed practices. We differ from the Commission's proposal in our distinction between black and grey and in our assignment of specific practices to specific lists. For example, Article 6 states that one should allow business users to bypass app stores. While we agree that this often corresponds to an abuse of dominant position, we can also envision efficiencies emanating from centralised control. As such, we would include these behaviours in our grey list that lets the platform make its case that efficiencies justify a closed system. Similarly, Article 5 would bar platforms from requiring its users to employ the platform's own identification system. Again, we would include these behaviours in our grey list, as there are reasonable theories of value creation that justify this type of restrictions. Again, the regulated platforms would need to justify why those restrictions are necessary though.

We also propose that the grey list obligations are imposed until the platform can successfully demonstrate the efficiencies, so that a platform's efficiency defence does not have suspensive effects on its obligations. This is to avoid strategic delaying of requirements to fulfil the respective obligations and provides incentives for platforms to provide the necessary information in a quick and timely manner. The Commission should also be able to adopt interim measures according to Article 22 in order to avoid irreparable damages. Finally, we suggest that the efficiency defence needs to fulfil the same standard of proof as in merger control and horizontal and vertical agreements that restrict competition.

In the next chapters, we develop our black and grey lists by considering specific types of gatekeeper practices. In Chapter 3, we consider potentially anti-competitive practices such as tying, bundling and self-preferencing. Chapters 4 to 7 deal with advertising, app stores, data, and acquisitions.

### **3 Anti-competitive behaviour**

The increasing market power — and abuse thereof — by major platforms has made some form of regulation and/or merger control a necessity, in fact an urgent need. The analogy with 20th century utilities and utility regulation, while imperfect, is also appropriate: In the electricity and telecommunications sectors of the 20th century (among others), economies of scale and economies of scope implied significant advantages for large firms. In digital platforms, network effects and learning-by-doing are likely the most important effects benefiting tech giants. What all of these have in common is the tendency for the industries to assume natural monopoly or near-natural monopoly features. This in turn makes actual competition difficult to sustain. And without competition, efficiencies brought by scale and network effects will not accrue to final users.

Notwithstanding these similarities, digital platforms are different in various respects. First, network effects are of a different nature than scale and scope economies. In particular, there is a dynamic, self-reinforcing element in network effects that is largely absent in more traditional natural monopolies. Second, the dynamic increasing returns forces in digital platforms are typically related to data accumulation, and data as an asset is particularly difficult to measure. It is also non-rival. Third, some of the possible anti-competitive behaviours by digital platforms (e.g., algorithm-based self-preference) are particularly difficult to observe. For these reasons, we believe there is a clear scope for a regulatory approach that applies primarily and differently to these digital platforms.

What can competition policy do about this? Broadly speaking, competition policy works on the control of three different dimensions: (a) horizontal and vertical agreements that restrict competition; (b) mergers and acquisitions; and (c) abuse of dominant positions or other measures of market power. It is largely agreed that (a) has relatively little “bite” in the context of platforms, if nothing else because they are typically not subject to relevant product market competition. In Chapter 7 we focus on (b). Although the report’s authors differ with respect to the role played by merger review in the platform space, we agree that its scope is limited. This implies that regulation, both ex-ante regulation and ex-post regulation addressing excessive market power and the abuse of dominant position, plays an important role.

In the next sections in this chapter, we address some issues that have been discussed (or litigated) in the context of digital platforms and which relate to the type of ex-ante-ex-post regulation considered in Chapter 2. In particular, we focus on tying and bundling; and on self-preferencing.

#### **3.1 Tying and bundling**

Tying, bundling and other related practices (e. g., pre-installed apps) may be used as a means to foreclose competition. These practices are not exclusive to the digital space. Moreover, there is not much that is very specific to the digital space, other than perhaps the difficulty in distinguishing pro-competitive from anti-competitive explanations.

The welfare effects of tying as a means to increase participation to a dominant platform are ambiguous. However, cases like Microsoft’s per-processor fees, Microsoft’s Internet Explorer or Intel’s all-unit discounts suggest that welfare-reducing foreclosure effects are common, especially when initiated by firms with significant market power.

Notwithstanding a long history of abuse of dominant position by means of tying and bundling, we also recognise that in some cases consumers benefit when firms bundle key services. For example, Google requires users of their location-based services to also use a Google approved version of Android. Hardware manufacturers who wish to use Google apps are required to join the Open Handset Alliance which obligates members to use only Google approved Android versions<sup>12</sup>. In this way, even though Android is open source, Google’s control prevents fragmentation of the code base. In this sense, one may argue that Google provides a benefit that stems from some level of standardisation. The downside is that potential operating system innovations are not interoperable with Google data services and Google may be able to charge higher prices for those services. The offsetting benefit is that app developers and hardware manufacturers have to contend with fewer variants of the Android operating system than they otherwise would and are thus able to ensure interoperability. The challenge, of course, is to know whether the potential harm is larger than the benefits. Research in sequential innovation suggests that there can be benefits to having a platform sponsor

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<https://arstechnica.com/gadgets/2018/07/googles-iron-grip-on-android-controlling-open-source-by-any-means-necessary/>

coordinate the ecosystem<sup>13</sup>. Bundling also occurs when platforms absorb functions that were previously provided by ecosystem partners into the core system. This can happen for numerous reasons. One anti-competitive explanation is that a platform might fear that a complement provided by an external party could become indispensable. For example, Apple invested in its own mapping functionality for the iOS system after Google launched the Android operating system and became a more direct competitor. It dropped Google's mapping app and bundled its own app into the base system as shipped to consumers.

Article 6 of the DMA includes tying and bundling in the list of prohibited gatekeeper practices "susceptible of being further specified." Recognising the anticompetitive effects but also the possible efficiencies from bundling, we recommend that tying and related practices be presumed anti-competitive and grey-listed, and that the burden of proving pro-competitive effects be placed on the gatekeepers. The presumption of anti-competitive effects, especially when the practice is initiated by a firm with market power, is important because of the fast pace at which digital markets evolve. For example, by the time the US Department of Justice was able to impose a consent decree to prevent per-processor fees, the foreclosure effects had already taken place. The recent Slack complaint against Microsoft might follow a similar path.

### 3.2 Self-preferencing

Platforms are rarely pure intermediaries that leave all production of goods and services to external parties. Most platforms are hybrids that vertically and/or horizontally integrate one or more products or services as a revenue source. For example, in addition to providing a platform for third-parties to sell their products, Amazon also sells products on its own account. The potential for harm is that the platform has an interest in favouring its own 'affiliate' and distort competition in a way that possibly reduces consumer welfare.

At some level, this is not fundamentally different from well-known cases — such as telecommunications — where we find distortions in competition due to partial vertical integration. Experience suggests that this problem is best addressed with a combination of ex-ante and ex-post regulation. Ex-ante regulation might include a general prohibition to discriminate against third parties. Ex-post regulation might include specific provisions for third parties to complain against unequal or unfair treatment. The DMA Article 6 proposes a number of ex-ante remedies to address self-preferencing. We would suggest that any form of discrimination against third parties be deemed unlawful. In other words, we believe self-preferencing is a natural candidate for the "blacklist" of practices to be deemed anti-competitive and "per se" disallowed.

At a general level, the above considerations are not specific to digital platforms. One aspect in which digital platforms are special is that self-preferencing frequently takes place in the form of algorithmic bias. This makes monitoring considerably more difficult. Suppose that Amazon's algorithm places an Amazon product higher on the list than competing third-party products. This may be due to self-preferencing or simply to the fact that Amazon's product is a better fit. In other words, if in some cases self-preferencing is blatant, in most cases, it is not<sup>14</sup>. Detecting it is probably one of the most complex and data-intensive monitoring tasks for regulators of online platforms.

At a conceptual level, a rule of non-discrimination would imply that an algorithm's recommendation (and the order of display) be a function of objective characteristics and not depend on the product's affiliation with the platform. A natural and simple test would be to run the ranking algorithm twice — with and without seller identities — and verify that it produces the same outcome: seller characteristics (price, location, reliability, delays, service quality, etc.) should drive the ranking, not seller identity. However, such a test requires regulator access to the algorithm. Article 24(2) of the DMA mentions the possibility of appointing "independent external experts and auditors to assist the Commission to monitor the obligations and measures and to provide specific expertise or knowledge to the Commission." We agree that this may be a necessary step, though we recognise that it may not be an easy one<sup>15</sup>. Moreover, platform operators can introduce bias in the algorithm through variables other than seller identity. Specifically, an algorithm can give extra weight to certain factors so as to effectively favour the platform's products.

<sup>13</sup> Parker, G. and Van Alstyne, M., Innovation, openness, and platform control, *Management Science*, Vol. 64, No 7, 2018, pp. 3015-3032.

<sup>14</sup> The US House of Representatives report on competition in digital markets (see footnote 3 for the full reference) provides a number of examples of alleged self-preferencing by Amazon.

<sup>15</sup> Chapter 8 of the present report, dealing with enforcement and the information gap between platforms and regulators, also touches on this issue.

More generally, the research literature on algorithmic bias shows that producing fair algorithmic outcomes is complex<sup>16</sup>. The statistical formulation of fairness and unbiased representations often results in lists of criteria that may be flawed depending on the context. Are market shares and prices adequate criteria for an unbiased presentation of products on e-commerce websites, or do they simply perpetuate existing situations? Consumers may pay attention to product quality, delivery conditions and other aspects. Factoring all these variables into an unbiased presentation leads to inherent trade-offs. This makes it very hard to define a general framework for the evaluation of bias and self-preferencing in search rankings or displays.

More transparency in the ranking criteria that play a role in search results and displays may make consumers more aware of possible bias. The main objective of the P2B Regulation is precisely to increase transparency in P2B relations. As a follow-up to the Regulation, the European Commission issued very detailed guidelines for platforms to increase transparency in search rankings<sup>17</sup>. We commend these efforts.

Notwithstanding the progress made along these dimensions, we believe there is room for ex-post regulation as well. Chapter IV of the DMA provides specific rules in this regard. In particular, Article 16 deals with market investigation into systematic non-compliance by gatekeepers. To put things in perspective, we note that the Google Shopping investigation by the European Commission stretched out from 2010 to 2017, with appeals still running in court as of 2020 (and with many still doubting the imposed remedies were appropriate). This suggests that we are still far from achieving an effective framework for ex-post access regulation: any harm done by the time the appeals are decided will likely be irreversible. We thus propose that, in addition to the provisions for investigations initiated by the Commission, there exist well-defined and easily implementable mechanisms whereby third parties can complain against platforms, and possibly request binding arbitration that would impose remedies relating to pricing or display practices. One specific proposal is that there be an arbitrator with sufficient independence, technical knowledge, and access to the platforms' data and algorithms. In this regard, we can learn from successful and from failed regulation. For example, arbitration seems to have played a positive role in telecommunications regulation, whereas the absence of a credible third-party arbitration authority undermined access of competitors to railway networks.

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<sup>16</sup> For an overview, see Tolan, S., Fair and Unbiased Algorithmic Decision Making: Current State and Future Challenges, JRC113750, JRC Digital Economy Working Paper 2018-10, 2018.

<sup>17</sup> European Commission Notice "Guidelines on ranking transparency pursuant to Regulation (EU) 2019/1150 of the European Parliament and of the Council" (2020/C 424/01) available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020XC1208%2801%29>

## 4 Advertising

Digital advertising is at the core of the business model of platforms such as Google and Facebook in particular: this is where they monetise their product. If there is an exercise of market power, then it will manifest itself in digital advertising.

A recent study done by the UK's Competition and Markets Authority (CMA) on digital advertising is very revealing<sup>18</sup>. First, the study shows that digital advertising is not to be conflated with other forms of advertising. Search advertising and display advertising are very different from other forms of advertising. The CMA study gives evidence of little substitutability between search and display advertising. It also shows how organic search results do not undermine Google's ability to exercise market power in paid ads, as it uses demotions to reduce the salience of organic results. This has to be accounted for when trying to delineate markets and business models. We agree with this and note how it is in stark contrast with previous approaches that tended to conflate many advertising channels, therefore ignoring possible concentration of economic power. Specifically, in the acquisition of WhatsApp by Facebook, the European Commission notes that "Facebook's market shares are equal to 20-30% in a number of Member States in a *potential market for overall online advertising*" (para 171 of the 2014 decision, emphasis added)<sup>19</sup>. One does not go very far in an actual case with this kind of market delineation. Instead, the CMA finds, for instance, that digital advertising in the UK is essentially a duopoly, with over 90% of search advertising going to Google and over 50% of display advertising going to Facebook.

In fact, the report shows how Google and Facebook are monopolists in their "walled gardens" (Google Search, Facebook social media)<sup>20</sup>. Google moreover has a strong market position in open advertising on webpages and in apps<sup>21</sup>. Google's return on advertising capital is over 50 percent which is an indicator of strong market position. Advertising markets are vertical stacks of layered intermediaries with Google having a strong position in most of these intermediary markets. About two thirds of all ad spending is absorbed in intermediary layers, only a third reaches the publisher of the ad.

A second important observation of the CMA's study is that, despite its obvious relevance, the online advertising market is very opaque and it is not easy to follow the chain of payments according to a PWC report<sup>22</sup>. Some money is also "lost", that is, they could not fully follow who gets what. This happens in a context where Google is present at several layers of the "open display" chain ("ad tech"), where it has large market shares at each stage. The advertiser receives hardly any information on readers of the ad. Intermediaries do not share that information. This opacity is almost by design and could be in itself a manifestation of abuse of market power. There is an analogy here with financial exchanges: conflicts will be rife if a platform owns the buyers' services, the sellers' services, sets the rules that determine price, runs the price discovery process, keeps the difference between the two prices along with other fees, and limits transparency into how the process works. Stock exchanges in fact are regulated so they cannot work like this, and generally financial services regulation provides a variety of protections and disclosures to prevent conflicts of interest of this type, and to ensure that agents have a fiduciary duty to the constituents they serve (or at least disclose when they do not). It is curious that nothing of this is being discussed in the context of ad exchanges, despite the clear economic analogies<sup>23</sup>.

The CMA lays out several competition concerns and theories of harm. Network effects and path dependency lead to market power and high prices: if advertisers pay higher prices than they would have otherwise paid for advertising their products, ultimately consumers will have to pay more since those will be passed on to final

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<sup>18</sup> UK Competition and Markets Authority (CMA) (2020), Online platforms and digital advertising market study, available at <https://www.gov.uk/cma-cases/online-platforms-and-digital-advertising-market-study>

<sup>19</sup> [http://ec.europa.eu/competition/mergers/cases/decisions/m7217\\_20141003\\_20310\\_3962132\\_EN.pdf](http://ec.europa.eu/competition/mergers/cases/decisions/m7217_20141003_20310_3962132_EN.pdf)

<sup>20</sup> Other walled gardens exist in very popular websites and apps, for instance Amazon advertising in its own store, Google and Apple advertising in their app stores (but not in apps). Some large news media are creating their own walled gardens (New York Times, Financial Times).

<sup>21</sup> However, a forthcoming report by ICF for the European Commission states that "Amazon has become a significant competitor in online advertising in recent years, growing at a 50% rate and accounting for 8.8% of the US digital advertising revenue in 2019. To some extent, more specific searches have grown in importance" (see Annex 4). In addition, the Economist reports an estimate that about 60% of product searches now start on Amazon.

<sup>22</sup> <https://www.isba.org.uk/knowledge/digital-media/programmatic-supply-chain-transparency-study/>

<sup>23</sup> See Srinivasan, D., Why Google Dominates Advertising Markets, Stanford Technology Law Review, Vol. 24, No 1, 2020, pp.55-175.

product prices<sup>24</sup>. Platforms' behaviour also create barriers to entry, especially through the use of defaults. There are also considerable privacy issues that are related to a possible lack of competition. Because Google advertising represents a significant cost for many specialist search providers, Google can further use its gateway position to undermine those specialists and put its own in a prominent position (again, a case of self-preferencing).

Against this backdrop, we now comment on the specific obligations that relate to advertising. Both measures focus on transparency, which is fine. Article 5(g) refers to sharing information on the pricing of an ad. On the publisher side, presumably this means that publishers will receive information on the ultimate payment made by the advertiser and information on the breakdown of charges by the intermediary. This is a good starting point to end the current situation where publishers only find out the high-level average price they are paying when Google deems it expedient to issue a blog post. On top of being able to compare value added of different providers, it would also shed light on price discrimination behaviour to better understand how much Google is actually charging for certain impressions. One would have to make sure that sharing impression-level data on advertiser payments does not represent an invasion of privacy, but we believe that it should be possible to produce somewhat aggregated or anonymised dataset which would tell publishers more about how much they were paying. On the advertiser side, it is less clear what it is meant by "pricing". The advertiser pays the total gross amount for the ad. Still, it would be useful for an advertiser to know how much publishers received out of the total amount it initially paid. This should be the symmetric of the publisher side, where publishers should know how much the advertisers paid.

Article 6(g) mandates the provision of ad performance measuring tools. The principle is to stop gatekeepers (Facebook and Google in particular) to make it harder for rivals to prove attribution for their ads (i.e. to show how effective they are driving advertiser conversion). Again, this makes sense, but we note this is a very specific and possibly minor intervention. It seems more important that advertisers/publishers should be able to access data in a raw/detailed fashion so that they can use third party verification and measurement tools<sup>25</sup>.

The advertising market needs some intervention to stop quasi-tying behaviour: exclusive distribution of inventory through one's own tech stack, or limiting interoperability with rival tech intermediaries. These aspects seem not to be captured by other articles in the DMA and hence this could be an area for improvement. It would also be important to see some independent oversight such that decisions to limit data flows need to be principles-based so that gatekeepers cannot use privacy as a justification to reduce data flows to rivals while keeping the data flowing within their walled garden. A question that needs to be tackled is whether browsers will be captured by the DMA gatekeeper obligations. Google is shifting a lot of functionality, and problematic conduct, to the Chrome browser where it presumably thinks regulation will take some time to follow. One should in fact always be aware that the market moves on rapidly, so that the rules may soon cease to be relevant.

Finally, we also observe that advertising markets in Europe are typically regulated along several dimensions because of the externalities they can generate (e.g., newspapers, television, billboards). It is not clear why digital advertising should escape this logic. There are a number of remedies that address externalities. Paul Romer proposed the imposition of a tax on digital advertising<sup>26</sup>. Alternatively, one could follow the route of price regulation. This would not be an entirely new approach in two-sided markets. For example, not long ago the European Commission imposed caps on intermediation rates in credit card networks<sup>27</sup>.

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<sup>24</sup> This is formalised in Prat, A. and Valletti, T., Attention Oligopolies, working paper available at <http://dx.doi.org/10.2139/ssrn.3197930>.

<sup>25</sup> See Google's decision post-GDPR as a good example of what should not be allowed. The effect of this decision was to force advertisers to use Google Ads Data Hub for attribution and measurement purposes – see <https://www.adexchanger.com/online-advertising/how-we-got-here-a-look-back-at-the-privacy-changes-that-reshaped-google>. It is clear that privacy was used as a pretext, since it is not a question of knowing whether the data can be accessed or not. Disaggregated data can still be accessed, but only within Google's ecosystem while before it was accessible via third party tools as well.

<sup>26</sup> This would address a negative externality issue, but not market power. Paul Romer, "A tax that could fix big tech", Opinion in the New York Times, 6 May 2019, available at <https://www.nytimes.com/2019/05/06/opinion/tax-facebook-google.html>.

<sup>27</sup> See [https://ec.europa.eu/commission/presscorner/detail/en/IP\\_15\\_4585](https://ec.europa.eu/commission/presscorner/detail/en/IP_15_4585)

## 5 App stores

The app store issues in this chapter generally fall into the same category as tying and related practices discussed in Chapter 3. Many of the DMA Articles 5 and 6 obligations discussed in Chapter 3 also apply here. We nevertheless think it is worthwhile to discuss app stores separately.

The Google Play and Apple App stores are clear cases of gatekeepers for access to app-based services on mobile phones. Consumers are locked into an app store once they buy an Android or Apple device<sup>28</sup>. Developers are locked in because they have to be present in each store if they want to reach consumers of both devices. App stores have an intermediation role between app developers and consumer demand and perform app quality and security control services to improve the user experience<sup>29</sup>. Some developers claim to be rejected for reasons that are not related to quality and security, but rather because they compete with native apps from the store and OS owner. App stores and OS owners are vertically integrated and develop their own apps that compete with independent app developers. Phones come with pre-installed apps developed by the store operators. Better knowledge of the OS, and possibly access to some technical features that are not available to external developers, implies that, other things equal, OS-developed apps tend to perform better and have an advantage over competing apps developed by third parties<sup>30</sup>. This gives them an incentive and the ability to foreclose current and future competitors. Moreover, the gatekeeper position of the Google Play and Apple App stores enables them to charge app developers a monopolistic 30 percent fee (“tax”) on app and in-app<sup>31</sup> purchases<sup>32</sup>, and fees for renewals of subscriptions<sup>33</sup>. Monopolistic fees in app stores can result in higher app prices to consumers, as some or all of the fees are passed on to consumers<sup>34</sup>. Fees for third-party apps distort price competition with their own apps. App stores can charge monopolistic prices in aftermarkets because they restrict app developers from dealing directly with their customers when selling in-app aftermarket services.

Apple’s app pricing and subscription renewal fees triggered complaints, including by Spotify (music streaming) and Epic (games), two firms that compete with Apple’s own products on price and quality. Spotify and Epic argue that these fees distort price competition between Apple services that are not subject to these fees and its competitors. Applying fees to own apps would imply the need for some form of account separation between the app store and internal app developers. Epic also complained because Apple and Google refused to allow an Epic game store app in their app stores. Allowing such an app would enable Epic to circumvent the gatekeeper.

There is an extensive law and economics literature dealing with primary markets and aftermarkets<sup>35</sup>. We do not think there is anything *essentially* different about platforms. The literature on primary and aftermarkets starts with the Chicago view which, based on a rather simplistic model, shows that market power in aftermarkets does not add to the overall extent of market power (the one-monopoly doctrine). Moreover, if there is sufficient competition in primary markets and consumers are rational and have perfect information

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<sup>28</sup> This is strictly true for iPhones, where side-loading of apps from other sources than the Apple store is technically blocked. Android phones do allow side-loading from other stores but strong network effects around the Google Play store effectively make the latter a quasi-monopolist. Competition between Android stores exists only in China, where Google Play is forbidden.

<sup>29</sup> Apple claims that its very stringent access and review conditions make it the most secure app store. According to the Nokia Threat Intelligence Report 2019, less than 1 percent of iPhone apps have security concerns, as opposed to 47 percent of Android apps.

<sup>30</sup> For example, evidence shows that both Google and Apple apps are often of better quality than substitutes from competitors because they have access to technical details of the OS. See Wen, W. and Zhu, F., Threat of platform-owner entry and complementor responses: Evidence from the mobile app market, *Strategic Management Journal*, Vol. 40, No 9, 2019, pp. 1336-1367.

<sup>31</sup> The market for in-app advertising services is open. In-store advertising is a reserved “walled garden” for the store operator.

<sup>32</sup> According to JRC calculations based on a sample of the Top-150 apps by downloads in 27 EU Member States with data from Similarweb, 56% of all free apps have in-app ads, 42% have in-app sales, 33% have a combination of both. 9% of paid apps have in-app ads, 26% have in-app sales, and only 4% have a combination of both.

<sup>33</sup> Apple announced in November 2020 that it would reduce this fee to 15% for app developers with an annual turnover of less than 1 million USD (most of the revenues to Apple come from app developers with turnover above this threshold). Renewal fees can also be lower than 30%, falling to 15% in some cases.

<sup>34</sup> A recent case study finds that Tinder’s prices are 11-17% higher on iPhones (where Tinder has to pay the 30% commission, or 15% for renewal) than they are on web browsers where the commission is limited to a payment processing fee, typically in the 1-5% range. See Jacobides, M., What drives and defines digital platform (gatekeeper) power? mimeo, London Business School, 2020.

<sup>35</sup> Cabral, L., Aftermarket power and foremarket competition, *International Journal of Industrial Organization*, Vol. 35, 2014, pp. 60-69.

they will decide on the basis of the combined cost for the two markets. There is no market failure in that case<sup>36</sup>.

The app store and in-app sales framework differs from the classic printer-and-cartridge sales case, however. First, in the printer-and-cartridge case, the producer benefits from tied sales, not the intermediary distributor. By contrast, in the app store case the distributor forces the consumer to return to the same store for aftermarket services, not only to the same app producer. Second, incomplete information impedes rational consumer decisions and may result in market failure. Apps are experience goods, aftermarket needs are not known at the time of initial purchase and only emerge over time. Third, online aftermarket sales are subject to behavioural biases in in-app advertising and to lock-in effects in apps that exhibit social network effects. Fourth, the app store's review service remains an important source of value-added for app upgrades in aftermarkets.

The DMA includes several gatekeeper obligations that are applicable to app stores and that address the lock-in concerns mentioned above. The most far-reaching obligations are contained in Article 6(c). These include (a) allowing the installation of third party applications in the OS of the gatekeeper, (b) including third-party application stores, and (c) allowing access to these apps through other channels than those provided by the gatekeeper. This would force OS gatekeepers to allow side-loading of apps from alternative app stores. This is already possible in Google Android phones, though rarely used. Android hardware manufacturers have their own in-app Android store and there are some independent stores as well. However, strong network effects make the Google Play store the favourite source of apps for most users. Apple iPhones block side-loading from other stores. It runs a vertically integrated hardware and software production model without third-party app stores. Implementation of these obligations would force Apple to open up this vertically integrated business model. Apple justifies this tight control by security and quality considerations. Evidence suggests that the contents of the Apple store are indeed, on average, more secure than Android stores<sup>37</sup>. Article 6(c) endorses that argument to some extent and allows the gatekeeper to retain control over the integrity of the OS and the hardware. That is not necessarily an endorsement for full quality control over all apps however.

Another set of obligations seek to create a more level playing field between OS owners and third-party app developers. Article 6(b) forces OS gatekeepers to allow uninstalling apps but stops short of prohibiting them from imposing requirements on hardware manufacturers to pre-install apps produced by the OS owner. Article 6(f) mandates that gatekeepers who provide ancillary services to core platform services should allow interoperability and equal access for third party providers of ancillary services, including the same hardware and software features that are available to the gatekeeper. Examples include access to the near-field communication chip (NFC) that is currently restricted in the Apple iPhone for exclusive use by Apple Pay<sup>38</sup>, and access to voice assistants.

Aftermarket foreclosure concerns are addressed in Article 5(b) that allows business users to promote offers to end users outside the core platform service, and Article 5(c) that allows end users to access content, subscriptions and other features through other channels than the core platform services of the gatekeeper. These obligations would allow Spotify and Epic, as well as other service providers with aftermarket payments, to route those payments through their own websites. It may create an incentive for app developers to reduce app download prices. This can deprive app store operators of a significant source of aftermarket revenues. They may try to compensate for this by increasing market entry prices for app uploads and reviews. Higher fixed market entry costs could improve app quality and may reduce the high rejection rate for app store applications. Apple also has the ability to recover its investment via the primary market (the price of the device), depending on how salient the prices in the app store are when consumers make their initial decision.

Many of the complaints by app developers stem from the high - and arguably supra-competitive - fees collected by app stores. Monopolistic market entry pricing concerns are not explicitly addressed in Articles 5 and 6 obligations. Article 6(k) mentions FRAND access conditions for business users to app stores. It is not

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<sup>36</sup> See Posner, R., The Chicago School of antitrust analysis, University of Pennsylvania Law Review, Vol. 127, 1979.

<sup>37</sup> Nokia Threat Intelligence report, 2019. Available at [https://onestore.nokia.com/asset/205835?\\_ga=2.157470514.948163518.1611998295-997506325.1611998295](https://onestore.nokia.com/asset/205835?_ga=2.157470514.948163518.1611998295-997506325.1611998295).

<sup>38</sup> Apple reserves NFC access for Apple Pay services. Remedies are not straightforward however. Regulatory attempts in Germany to force open access to the NFC for payment services show that network effects at the level of payment services platforms may frustrate this. In Germany, the 2020 "Lex Apple Pay" forced Apple to open access to the NFC to all payment service providers. This regulatory intervention failed to open the market because of strong network effects around Apple Pay. Even banks that pushed for this law have agreed to cooperate with Apple Pay rather than launching their own payment service. See Franck, J. U. and Linardatos, D., Germany's 'Lex Apple Pay': Payment Service Regulation Overtakes Competition Enforcement, Journal of European Competition Law and Practice, 2020.

clear to what extent that addresses price discrimination and monopolistic pricing. However, the Article 6(c) obligation to allow third-party app stores in the OS opens the possibility for price and quality competition between app stores. App stores with lower entry and aftermarket prices might attract more app developers and apps and erode the dominant position of the Google Play and Apple App stores. Stores that invest more in app quality controls may attract less price elastic consumers. Network effects around the dominant stores may however reduce the effectiveness of price competition. The interaction between price, quality and network effects is hard to predict.

An alternative but more interventionist solution would be direct market entry price controls, including in aftermarkets, similar to telecom and utilities regulation. In telecoms, long-run incremental cost (LRIC) models provide guidance for average cost pricing, based on reasonable running and investment cost estimates<sup>39</sup>. Price regulation is complemented with quality controls and innovation incentives. Price competition, if effective, may facilitate quality differentiation and innovation-driven competition without these controls. It can provide a good balance between the benefits of app store quality control and the costs stemming from excessive market power.

Price competition may fragment the app stores market and reduce the magnitude of the network effects currently enjoyed by the dominant app stores, the Google Play and Apple App stores. That may increase search costs for consumers and marketing costs for developers, as we observe in the China Android ecosystem<sup>40</sup>. This is another example where policy intervention walks a thin line between, on the one hand, increasing welfare benefits by reducing market concentration and lock-in effects and, on the other hand, reducing the welfare benefits from quality control and network effects.

We endorse the relevant obligations pertaining to app stores contained in Articles 5 and 6. The most far-reaching obligations are included in Article 6(c) and thus subject to further specification. It remains to be seen how these obligations will be interpreted and implemented in practice.

We consider that it would be important to monitor if these obligations result in effective price and quality competition between app stores within a single OS ecosystem, and do not promote competition at the expense of undermining the welfare benefits from network effects. If network externalities are at risk, remedies that directly reduce entry barriers to the dominant app store may be more effective than remedies that seek to increase competition between app stores. This could include direct price controls and an independent app quality appeals authority that can quickly review rejected apps and ensure their access to the store if approved.

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<sup>39</sup> This would not be an entirely new approach in two-sided markets. For example, the European Commission imposed caps on intermediation rates in credit card networks.

<sup>40</sup> In China, the Google Play store is forbidden. That eliminated network effects around this store and resulted in hundreds of competing Android app stores, though with an allegedly lower quality of apps. See Wang, H., Liu, Z., Liang, J., Vallina-Rodriguez, N., Guo, Y., Li, L., Tapiador, J., Cao, J. and Xu, G., Beyond Google Play: A Large-Scale Comparative Study of Chinese Android App Markets, Proceedings of the Internet Measurement Conference 2018 (IMC '18), Association for Computing Machinery, New York, doi: <https://doi.org/10.1145/3278532.3278558>

## 6 Data sharing between gatekeepers and business users

One might say that what the major tech firms have in common is a platform that effectively works as an “essential facility”, to use the terminology from utility regulation. However, data is probably the most critical asset that generates market power for tech giants. A number of data issues directly impinge on regulation. Data played no role in classic regulation of utilities, infrastructure and network industries. They were also less important in pre-digital cases of abuse of market power through tying, bundling, foreclosure and self-preferencing. However, they have become much more important in regulatory scrutiny of digital markets.

Because of economies of scale and scope in data aggregation, the social value of aggregated data often exceeds the private value of segmented data<sup>41</sup>. Positive externalities born of this socially aggregated data drive network effects in platforms and are a source of value gains for users. At the same time, these data-driven positive externalities can be a source of market failures. They may lead to market tipping and monopolistic behaviour by large platforms that act as gatekeepers to services. They also result in strong information asymmetry between the platform and its users. It gives platforms a privileged market overview and monopolistic advantage over their business users. Platforms exploit this information asymmetry to compete with their business users in product markets and/or extract more value from these users. Compared to the platform, business users might be able to generate more value and innovative products and services if they had access to the aggregated data. This tension between market failures and efficiency gains pervades the debate on data sharing.

There are several types of data in platforms. Directly or indirectly, users can volunteer personal information that typically remains constant over time (e.g., name, gender, location). Data on interactions with other users and content are observed in a dynamic way. This allows platforms to monitor their users’ preferences over time as an input to their matching algorithms. Platforms’ exclusive access to these data generates a comparative advantage against competitors that do not have the ability to observe users’ actions in the ecosystem. Algorithms reinforce the value of the data through a feedback loop that builds on better predictions and learning-by-doing that, in turn, strengthens data-driven network effects. As a result, more users will consume their goods which, in turn, generates more data to improve ranking and matching algorithms and increase the value of services. Market entrants are unable to reach similar levels of service quality because of lack of data. Moreover, data can generate additional value through economies of scope in re-use and aggregation. Data from one market can be re-used to provide services in adjacent markets. Data can also generate additional value by aggregating complementary datasets. In short, data-driven insights can be used to match consumers and business users more efficiently than in atomised markets outside of a platform. It generates positive network effects and welfare externalities for users.

At the same time, exclusive control over the data allows gatekeepers to control the ecosystem and capture significant value for their intermediation services. They can impose excessive entry and access conditions, and exclusive dealing rules preventing sellers from promoting their offers outside the gatekeeper’s platform. Refusal to share the data with business users in the platform, or with competing platforms, gives them a competitive advantage that gatekeepers can use to foreclose the market and strengthen their monopolistic position, to the detriment of user welfare.

Several authors have suggested that a promising form of regulation is precisely to require the tech giants to share some of their data with small (or not so small) competitors<sup>42</sup>. The DMA imposes a number of data sharing obligations that aim to reduce gatekeepers’ exclusive control over the data they collect with a view to diminish their hold on the platform services market. These obligations seek to eliminate market distortions inside the platform, including self-preferencing and information asymmetries between the platform and its business users, as well as distortions between competing platforms. All these remedies entail trade-offs between costs and benefits of data-driven network effects. They should avoid excessively weakening positive network effects because that would reduce the social value of the platform and the data. The guiding principle is to try to preserve positive externalities, when present, and to ensure they are enjoyed industry-wide rather than accruing to only one firm.

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<sup>41</sup> Bergemann, D. and Bonatti, A., Markets for information: an introduction, CEPR Discussion Paper DP 1314, 2018; Bergemann, D., Bonatti, A. and Gan, T., The economics of social data. Cowles Foundation Discussion Paper 2203R, 2019.

<sup>42</sup> For instance, Mayer-Schönberger, V. and Ramge, T., Reinventing Capitalism in the Age of Big Data, Basic Books, London, 2018; Parker, G., Petropoulos, G. and Van Alstyne, M., Platforms, Power and Antitrust: A Proposal Towards Efficient Information Sharing , mimeo, 2020.

## 6.1 Avoiding discrimination within the gatekeeper platform

In addition to their intermediation services, platforms may supply their own products and services in direct competition with their business users. If the platform's own supply provides a better match with consumer preferences, then there is no self-preferencing, as the outcome is based on maximisation of consumer value. If not, the value of the transaction declines and more efficient competitors may be foreclosed.

Article 6(a) prohibits data-driven self-preferencing and imposes the obligation to refrain from use of data generated by business users' activities to compete with business users, unless these data are "publicly available"<sup>43</sup>. This creates a "Chinese Wall" inside the platform, between the gatekeeper and its vertically integrated parts that compete with business users on the platform. It stops short of complete vertical disintegration into separate firms. Information flows from the platform to the separated parts are not allowed, unless that information is shared with all business users<sup>44</sup>. This will only happen when it is in the private interest of the platform. Some information will not be shared at all, even though it may be beneficial for others. The social value of data is not fully realised. The social value does not figure in the platform's private decision parameters.

For example, empirical evidence shows that Amazon uses its privileged market overview to target successful product spaces for vertical integration and that it is less likely to enter product spaces that require greater seller effort to grow<sup>45</sup>. This is not entirely surprising, considering the massive amount of data that the platform collects on transactions of all sorts of products. As with price discrimination, there are counterbalancing forces. There is a negative effect, namely a lower incentive for new product introduction by third parties (if my product is successful, then the platform will create their own version of the product). However, there is also a positive effect, namely a better selection of products offered through the platform, and possibly lower prices for consumers as well. Recent research attempts to balance the positive and negative effects of regulation in this area<sup>46</sup>.

In our view, an outright ban on the use of data for the promotion of vertically integrated services illustrates the tension between the pursuit of competition policies and maximising the social value of data for society. Policy makers will have to design a carefully mixed cocktail of measures that ensures a positive trade-off between these objectives. We note that there is disagreement among the panellists on this point. Some would prohibit gatekeeper platforms from directly competing with their own business users with a goal of restoring a more level playing field that is at present tilted in favour of incumbents.

## 6.2 Data sharing obligations with business users inside the platform

The DMA contains two obligations for gatekeepers to give business users access to the data of interactions with their end users inside the platform.

- Article 6(h): Provide effective data portability to business users, subject to consent of end users.
- Article 6(i): Provide business users with unhindered and free access to aggregated and non-aggregated data provided and generated in the use of the core platform service - subject to provisions of data protection law.

Article 6(h) is inspired by the data portability right for natural persons in Article 20 of the EU GDPR and grants a similar right to business users to access their commercial transactions and interactions data. It recognises that consumer privacy rights take precedence: businesses require end user consent to access personal data. Article 6(i) adds two important provisions: (a) free access to the data and (b) access to all types of data, including provided and generated data, and aggregated as well as non-aggregated individual business user

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<sup>43</sup> This is in line with the European Commission's statement of objections regarding Amazon's use of non-public business data of independent sellers who sell on its marketplace, to the benefit of Amazon's own retail business, which directly competes with those third party sellers. See [https://ec.europa.eu/commission/presscorner/detail/en/ip\\_20\\_2077](https://ec.europa.eu/commission/presscorner/detail/en/ip_20_2077)

<sup>44</sup> It would be very difficult to verify compliance with this obligation. Even an embedded auditor cannot trace all internal communication inside the platform.

<sup>45</sup> Zhu, F., and Liu, Q., Competing with complements: An empirical look at Amazon.com, *Strategic Management Journal*, Vol. 39, 2018, pp. 2618–2642.

<sup>46</sup> Hagiwara, A., Teh, T.-H. and Wright, J., Should Platforms Be Allowed to Sell on Their Own Marketplaces?, mimeo, 2020.

data. Both articles add an important qualification: continuous and real-time data access. This goes beyond the GDPR.

Data access is only enabled in vertical business user silos; there is no access to data from other business users. This obligation preserves data silos between business users as well as the gatekeeper platform's privileged market overview and information asymmetry with business users. It maintains the position of the gatekeeper as the unique beneficiary of the social value of the insights generated through economies of scale and scope in data aggregation across businesses and end users. Article 6(a) prevents them from using this to improve their position in markets where they compete with their business users (vertical integration). Still, there may be ways to share and redistribute that social value as well among business users. Doing this with fine-grained business data would put the platform's entire business user activity dataset in the public domain, stripped only of individual end user data<sup>47</sup>. This would not only reveal commercially sensitive business information. It would also put the platform's matching data in the public domain and enable competitors to emulate the platform's matching algorithms. Short of such an extremely disruptive approach, sharing that social value would require some degree of data aggregation and masking of business user identities and possibly product and services characteristics. That, in turn, may reduce the market value of the data. There is a trade-off between these two poles.

Data portability runs into a number of technical, legal and economic obstacles<sup>48</sup> in the case of natural persons under Article 20 GDPR. The same obstacles apply to portability rights for business users: rapid depreciation, loss of context once data assets are ported from the original platform, and the need to obtain consent from natural persons to port personal data. As a result of these issues, we explore an alternative to data portability which would be to grant individuals *in-situ* rights to access end user data<sup>49</sup>. Rather than transferring the individual data from the gatekeeper to another business user, the latter could run third party algorithms on the data resident on the gatekeeper's server, without direct access to individual data.

*In-situ* access rights address several of the data portability problems listed above<sup>50</sup>. First, data retains its multiparty context so interpretation is not lost. Second, data is recent, spanning both stock and flow, so that it does not obsolesce. Third, data is not separated from infrastructure so it remains actionable. It can be used, on the consumer's behalf, to execute a transaction or receive a reward where it is located in contrast to ported data where it could not. Importantly, business users may invite third parties to create benefits on their behalf using the same infrastructure as the original platform. This enables competition on top of the platform's infrastructure, which has the desired effect of forcing the platform to share more of the data benefits with users themselves. We note, however, that *in-situ* access alone does not eliminate the interoperability problem but shifts the technical challenge from data to algorithm interoperability. In order to have an effective information sharing mechanism that reduces the knowledge advantage of the gatekeepers and their subsidiaries, the *in-situ* access should be complemented with a proper regulatory framework. This framework should define some minimum compatibility standards and further rules and technical specifications that enable continuous and real-time data access and information sharing in a transparent manner<sup>51</sup>.

We note that there seems to be no interoperability requirement in the DMA for the applications that are generally brought forward as the most significant case of walled gardens, i.e., instant messaging and social media (except for collateral features such as logins and payments; see Article 6(f)). The architectural model of interoperable, competing pieces of hardware and software based on common open standards is what allowed the Internet to flourish, and create fast and widespread economic and cultural progress. This model could still be upheld by regulation by extending Article 6(f) to industry-standard features of the core platform services of the gatekeeper.

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<sup>47</sup> There is asymmetry in the legal protection of personal and commercial data. Consumers' personal data are protected by the EU GDPR. There is no equivalent protection for data from business users. Platforms are free to treat these data as they wish.

<sup>48</sup> Kramer, J., Personal data portability in the platform economy, *Journal of Competition Law and Economics*, 2020; Kramer, J., Senellart, P. and de Strel, A., Making data portability more effective for the digital economy, CERRE report, Brussels, 2020.

<sup>49</sup> The idea for *in-situ* access to platform data was first proposed by Parker, G. and Van Alstyne, M., Innovation, Openness, and Platform Control. *Management Science*, Vol. 64, No 7, 2018, pp. 3015-3032. See also Parker, G., Petropoulos, G. and Van Alstyne, M., Platforms, Power and Antitrust: A Proposal Towards Efficient Information Sharing, mimeo, 2020.

<sup>50</sup> *In-situ* access is a central characteristic in the Open Algorithms Project (<https://www.opalproject.org/>), which has already been implemented in some countries.

<sup>51</sup> An example of such a regulatory framework that incorporates *in-situ* access is provided in the EU second Payment Services Directive, (EU)2015/2366, available at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32015L2366>

### **6.3 Data sharing with business users outside the platform**

The DMA data sharing obligations discussed above relate to data sharing between the platform and business users inside the platform. It is important to note however that the obligations in Article 6(h and i) may boil down to data sharing across platforms when businesses multi-home across platforms. It would for instance enable business users to take their consumer review scores from one gatekeeper platform to another. Importantly, this introduces moral hazard in which merchants can selectively repost their best scores, omitting their worst, on other platforms. This is one more problem addressed by *in-situ* access.

Two obligations in the DMA explicitly refer to data sharing outside the platform.

According to Article 5(a), gatekeepers should refrain from combining personal data across platforms unless there is an opt-out option for end users. The EU GDPR already prohibits the re-use of data collected for other purposes than those for which they were originally collected. This provision reduces welfare gains from economies of scope in the re-use and aggregation of personal data. However, platforms can circumvent this by including re-use clauses in the Terms of Service and the consent notice that end users accept<sup>52</sup>.

Platforms' access to personal data has ambiguous welfare effects for end users. On the one hand, platforms that have more access to personal data can provide more efficient services to users<sup>53</sup>. It increases the variety of products that consumers can find and the matching efficiency in e-commerce platforms. On the other hand, users may pay a higher indirect cost for these improved services as business users are charged a higher market entry price by more efficient platforms. This, in turn, affects the price that users pay for services<sup>54</sup>. Importantly, asymmetric access to personal data is also an impediment to long-run competition between platforms, with negative effects on consumers compared to a counterfactual where more symmetrically placed platforms compete (and the benefits from competition go to the consumers).

Article 6(j) creates the obligation for search engine gatekeeper platforms to give third-party providers of search engine services access to query, click and view data from free (organic) and paid (ads) search results, subject to provisions of data protection law. The obligation mentions that data access can be subject to fair, reasonable and non-discriminatory terms of payment. In practice, this obligation would make Google Search data accessible to competing search engines that are currently struggling to gain traction in the search market. Economies of scale and scope in data aggregation play an important role in the efficiency of search engines<sup>55</sup>. If data sharing were to erode Google Search's market share and redistribute users across many smaller search engines, fragmentation could also erode the magnitude of network effects. However, we suspect that a dominant search engine such as Google is well past the point of diminishing returns to additional data aggregation and user base growth, so any such erosion from competitive entry is likely to be minor. Smaller search engines<sup>56</sup> would not have the obligation to share their data with competitors.

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<sup>52</sup> Condorelli, D. and Padilla, J., Harnessing Platform Envelopment in the Digital World, mimeo, 2019.

<sup>53</sup> Sun, T., Yuan, Z., Li, C., Zhang, K. and Xu, J., The Value of Personal Data in Internet Commerce: A High-Stake Field Experiment on Data Regulation Policy, mimeo, 2020.

<sup>54</sup> Kirpalani, R. and Philippon, T., Data sharing and market power with two-sided platforms, NBER Working Paper 28023, 2020.

<sup>55</sup> Schaefer, M. and Sapi, G., Data Network Effects: The Example of Internet Search, mimeo, 2019; McAfee, P., Rao, J., Kannan, A., He, D., Qin, T. and Liu, T. Y., Measuring Scale Economies in Search, Lear conference 2015. Slides available at <https://www.learconference2015.com/wp-content/uploads/2014/11/McAfee-slides.pdf>

<sup>56</sup> Note that Article 2(5) of the P2B Regulation defines "online search engine" as general search engines: a digital service that allows users to input queries in order to perform searches of, in principle, all websites. This means that narrow sector or domain specific search engines are excluded from this obligation. The DMA applies the same definition.

## 7 Mergers and merger policy

Article 12 in the DMA imposes on gatekeeper platforms the obligation to notify the Commission of any intended “concentration” (in the sense of EC Regulation 139/2004) that involves another provider of core platform services or any other digital service provider. Compared to other parts of the DMA, the provisions in Article 12 would not be a game changer.

In this chapter we offer some considerations regarding the economics of mergers and acquisitions in the digital space. In the first section, we examine the effects of mergers and acquisitions in the digital world, whereas in the second section we focus on merger policy in these industries.

### 7.1 The effects of mergers and acquisitions in the digital world

Mergers and acquisitions play different roles in different industries. Distinguishing these roles and their associated effects is an essential first step towards an appropriate policy that balances merger efficiencies against threats to competition.

#### 7.1.1 Pre-emption

In some cases, acquisitions have the goal — and the effect — of pre-empting potential competition. In the pharmaceutical industry, these “killer acquisitions” have been extensively documented and their pre-emptive nature proven in a compelling way<sup>57</sup>. In the digital space, a number of acquisitions arguably had that effect. Some of the examples most frequently cited include Instagram, WhatsApp and Waze<sup>58</sup>. In most cases it is unlikely that this pre-emptive effect is present. For example, a description of 300 transactions by three GAFAMs (Google, Amazon and Facebook), using data from Crunchbase, suggests that many mergers are non-horizontal, i.e., they target complementary activities<sup>59</sup>. One reason why pre-emption is possibly less common in the digital sector than in other sectors — such as pharma — is that identifying potential competitors is difficult<sup>60</sup>. Still, no merger has ever been blocked, including those few that involved, as targets, established companies that had already achieved tens if not hundreds of millions of subscribers.

In a strict sense, killer acquisitions refer to the case when firms acquire innovative targets solely to discontinue the target's innovation projects and pre-empt future competition. However, pre-emption may take place in other forms. In the digital space, one possible form of pre-emption is given by the so-called “killer zone” effect. Specifically, empirical research suggests that acquisitions by tech giants tend to decrease the entry of new firms and venture capital investments in product markets where the acquisitions took place<sup>61</sup>. We are divided as to the interpretation of these empirical findings. One possibility is that not only are these acquisitions pre-emptive in nature but they also produce a “chilling” effect on entrants, who fear being “killed” by the tech giants by acquisition. A different perspective is that acquisition of firm A decreases the probability that firm B, working in the same segment, will be acquired (i.e., the tech giant looks for one asset in a given segment and the marginal value of acquiring a second asset is very small). The first view is consistent with the idea that acquisitions reduce innovation incentives. It is also consistent with a positive innovation for buyout effect. The second perspective is consistent with the idea that new ventures follow a strategy of

<sup>57</sup> See Cunningham, C., Ederer, F. and Ma, S., Killer Acquisitions, *Journal of Political Economy*, 2020. This work also documents how these acquisitions disproportionately occur just below the threshold for antitrust scrutiny, so that they are not vetted by antitrust authorities.

<sup>58</sup> Facebook bought a spyware company – Onavo – with the purpose of monitoring which competing products were growing particularly fast and could represent a threat. Specifically, this information was used to purchase WhatsApp that was seen growing faster than Messenger. See UK parliamentary inquiry for evidence from Facebook internal emails.

<sup>59</sup> See Argentesi, E., Buccrossi, P., Calvano, E., Duso, T., Marrazzo, A. and Nava, S., Merger policy in digital markets: An ex-post assessment, *Journal of Competition Law and Economics*, 2020. We have some reservations about the methodology of this study because it is merely descriptive and there is no control group. It does not attempt to analyse what would have happened “but for” the mergers that happened.

<sup>60</sup> “If pharma is like war, digital is like terrorism: You rarely know where the next attack will come from. You don't even know who your enemy really is, let alone where it's located” (Cabral, L., Merger Policy in Digital Industries, *Information Economics and Policy*, 2020). That said, there is evidence that some dominant companies have employed analytics to constantly monitor potential rivals with the purpose of purchasing them; Facebook's use of Onavo is the most evident case.

<sup>61</sup> Koski, H., Kessi, O. and Braeseman, F., Killers on the road to start-ups, ETLA working paper, 2020; Kamepalli, S., Rajan, R. and Zingales, L., Kill zone, NBER working paper 27146, 2020.

innovation for buyout. Absent a natural or controlled experiment it is difficult to tease out the two interpretations empirically<sup>62</sup>. In addition to the empirical evidence of “killer zone” effects, a number of authors have presented coherent models of a pre-emptive motive by high-tech firms that lead to less innovation overall<sup>63</sup>.

### 7.1.2 Synergies

Since 2000, the GAFAM tech giants have acquired about 1000 firms<sup>64</sup>. Google has been particularly aggressive, having bought on average one company every 3 weeks for the past 10 years. The argument can be made that a substantial fraction of the value created by tech giants has resulted from many of these acquisitions. Examples include the iPhone’s touch screen. Others are more controversial. For instance, Google’s acquisition of DoubleClick directly led to its dominant online advertising operation<sup>65</sup>. Facebook’s dramatic growth has been driven by its acquired WhatsApp and Instagram divisions. Amazon’s acquisitions of Zappos and Whole Foods have extended its reach into new retail areas.

It is remarkable that of these hundreds of acquisitions only a few got and continue to get significant airtime (Waze, WhatsApp, Instagram, DoubleClick). The vast majority of mergers likely fall under the category of complementarities between incumbent and entrants. But again, as the problem has not been studied by independent academics (for lack of data) nor dealt with by enforcers (for lack of cases), the discussion is typically quite abstract as it looks at what happened after the fact, while merger analysis should involve an ex-ante approach and imagining counterfactuals.

### 7.1.3 Innovation

Scholars and policymakers unanimously agree that innovation plays a central role in the high-tech space, and that an optimal policy should take into account not only its immediate effect on consumer welfare but also its effect on innovation rates. Economic analysis of digital industries identifies two possible effects of high-tech market power on innovation, a positive effect and a negative effect.

The primary negative effect of tech giants on innovation results from what we might call the “shadow of Google” effect, namely the idea that a new entrant’s innovation runs a serious risk of being captured by a large incumbent in the form of imitation<sup>66</sup>. Intellectual property (IP) is notably difficult to protect in the digital space. Neither copyright nor patents are particularly helpful when a large incumbent creates their own version of the entrant’s product, a version that has the same “look and feel” even if it does not violate any formal IP right. This negative effect is well-documented, for example, in the context of mobile apps: the threat of Google’s entry tends to reduce innovation rates, both in terms of new apps and in terms of updates to existing apps<sup>67</sup>.

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<sup>62</sup> Research is now emerging trying to make use of publicly available data. A large part of the problem is that almost no merger has been vetted by authorities — who would have the power to require data — and the companies themselves have made no data available to the academic community to study these phenomena independently.

<sup>63</sup> References include Katz, M., Big-tech mergers: Innovation, competition for the market, and the acquisition of emerging competitors, mimeo, 2020; Motta, M. and Peitz, M., Big Tech Mergers, CEPR Discussion Paper No. DP14353, 2020; Fumagalli, C., Motta, M. and Tarantino, E., Shelving or Developing? The Acquisition of Potential Competitors under Financial Constraints, CEPR Discussion Paper No. DP15113, 2020; and Letina, I., Schmutzler, A. and Seibel, R., Killer Acquisitions and Beyond: Policy Effects on Innovation Strategies, CEPR Discussion Paper No DP15167, 2020.

<sup>64</sup> Cabral, L., Merger Policy in Digital Industries, Information Economics and Policy, 2020. Parker, G., Petropoulos, G. and Van Alstyne, M., Platform mergers and antitrust, mimeo, 2021.

<sup>65</sup> Jeon, D. S., Market power and transparency issues in open display advertising, forthcoming publication of the Observatory of the Online Platform Economy, <https://platformobservatory.eu/research/>

<sup>66</sup> Cabral, L., Standing on the Shoulders of Dwarfs: Dominant Firms and Innovation Incentives, CEPR Discussion Paper No DP13115, 2018.

<sup>67</sup> Wen, W. and Zhu, F., Threat of platform-owner entry and complementor responses: Evidence from the mobile app market, Strategic Management Journal, Vol. 40, No 9, 2019, pp. 1336–1367. The authors show that developers vulnerable to Google’s entry threat reduce innovation on affected apps by 5.1% and increase these apps’ prices by 1.8%. They shift innovation efforts (measured by the number and pace of app updates) to unaffected markets, manifested in a 4% increase in updates on existing apps and a 3% to 10% increase in the introduction of new apps. Developers that have popular products affected by an entry threat react differently and increase innovation by 7.8% for affected apps and 15% for unaffected apps.

The primary positive effect of tech giants on innovation results from inducing new ventures to follow the business model of “innovation for buyout”. This is particularly important when the new venture’s product is complementary to the incumbent’s and has greater value when combined with the incumbent’s assets.

An additional effect of gatekeeper dominance on innovation is the substitution of external for internal innovation efforts. Earlier we discussed killer acquisitions. However, what seems empirically more prevalent in the digital space is that, frequently, an acquisition effectively extinguishes the buyer’s standalone research effort. As platforms continue to expand into adjacent fields, their acquisitions are often evaluated internally in terms of ‘buy vs build’ (as evidenced, for example, by internal email exchanges). With sprawling capabilities, competences, and limitless internal funding, buyers are often already on the way to building a specific functionality themselves. As the opportunity to buy comes along and actually takes place, the target’s assets are incorporated into the incumbent’s ‘ecosystem’ and the incumbent’s own project may be quietly shelved. As in killer acquisitions, one of the two innovative efforts is extinguished, though in this case it’s the buyer’s, not the target’s<sup>68</sup>.

From a social point of view, the goal is to increase innovation output, not innovation inputs. Reducing the extent of duplication of innovative efforts may be welfare increasing<sup>69</sup>. Against this view, one must add that, first, where markets have tipped or are close to tipping, innovation efforts by potential challengers is weakened and, by allowing a further merger, we may already be foregoing competition that is ‘not even born’ by challengers we will never know. Merger policy thus needs to lean towards preserving more, rather than less innovation effort. Second, the welfare effect of foregoing one of two innovation efforts may be sizeable if the two were to turn into real competitors. The ‘prize’ is larger (and potentially huge) in cases where the target would have been a real substitute, allowing us to get away from monopoly/super dominance in the ‘primary’ market. But even short of that more extreme version, the welfare benefits of competition are likely to be sizeable.

## 7.2 Merger policy in the digital space

The multiplicity and complexity of the effects involved in the mergers and acquisitions process makes it difficult to formulate clear general principles. In fact, this is one area where there is disagreement among Panel members. Some believe that a considerably stricter merger policy should be in place for dominant firms, based on the pre-emptive effect of acquisitions and almost non-existent enforcement (“we can only move in the direction of greater enforcement”). In particular, at least one Panel member subscribes to the recommendation of the Stigler report and other analysts that the burden of proof in merger review should be reversed: let the acquirer prove that the effect of the proposed acquisition is pro-competitive. Ultimately, if synergies are at the core of the acquisition (and improve consumer welfare), this information should be known to the acquirer that could prove to the authorities that the merger is essential to reach those synergies. This proposal would have the added merit of asking the dominant companies (who have large resources) to conduct this analysis in lieu of enforcers that are less equipped.

By contrast, at least one Panel member believes that the positive innovation incentives from technology transfer — which is primarily effected by means of acquisition — are sufficiently important to warrant a relatively “soft” merger policy. This view is cemented by the belief that there are other instruments to rein in the tech giants’ market power, namely regulation.

We agree that the traditional distinction between horizontal and vertical mergers does not make much sense with multi-sided digital platforms. Initial complements may themselves transform later into substitutes. Acquisitions are often in the form of annexations. The owner of the platform, or one of its elements, annexes the tools, services, or agents of one of the user sides of the platform. This creates conflicts of interest rather than resolving them (e.g., preventing multi-homing, or self-preferencing). For instance, when Google acquired DoubleClick (a ‘vertical’ merger in current parlance) the ad intermediation market was characterised by healthy competition, multi-homing and interoperability. Following the merger, the situation changed dramatically with Google effectively able to monopolise almost the entire ad tech stack.

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<sup>68</sup> Caffarra, C., Crawford, G. and Valletti, T., How Tech Rolls: Potential Competition and ‘Reverse’ Killer Acquisitions, VoxEU, CEPR, 2020. Available at <https://voxeu.org/content/how-tech-rolls-potential-competition-and-reverse-killer-acquisitions>

<sup>69</sup> Dasgupta, P. and Stiglitz, J., Industrial Structure and the Nature of Innovative Activity, The Economic Journal, Vol. 90, No 358, 1980, pp. 266-93.

One of the points of agreement when it comes to merger policy in the digital space is that the current instrument is badly incomplete. Traditional merger policy is based on the idea of a well-defined industry, with a well-defined set of players and market shares. This system does not work properly in the digital segment. Large platforms meet the worldwide turnover threshold but the acquired firms are often small start-ups with little turnover and, in some cases, barely any revenues at all. To be clear, of the many hundreds of GAFAM acquisitions only a handful were reviewed while approximately 97% of these tech company acquisitions have not even been vetted, globally. To date, not a single one has been blocked anywhere.

## **8 Enforcement and the information gap between platforms and regulators**

A number of reports identified the slowness of ex-post competition policy tools when applied to digital markets as a major reason to introduce ex-ante regulatory instruments, such as the DMA proposal. While competition policy procedures may be relatively slow in general, this is particularly striking in fast-moving digital markets. Harm may be irreversibly done before a competition authority comes to a judgement. One important reason for this slowness is the widening information gap between authorities and firms in digital platform markets. Never before did firms collect and process such comprehensive and detailed datasets on production, sales and clients interactions. Never before were regulators in such a strong comparative information disadvantage with regard to the firms they are supposed to supervise. Platforms may have all the necessary data to address a case but will be reluctant to release and share it with regulators. Moreover, regulators are not always in a position to handle and analyse very large and complex datasets. Understanding platform behaviour often involves experimenting with the algorithms that drive their behaviour.

This is illustrated by a number of recent digital market cases. The Google Shopping<sup>70</sup> investigation took seven years and it still remains unclear whether the remedies actually solve the identified problem. The European Commission's recent stance on alleged self-preferencing in the Amazon store indicates regulator's prudence in the absence of "smoking gun" information.

Information asymmetries between authorities and firms typically concern all three steps of a classical competition case analysis: market definition, firm conduct, and remedies. Regarding market definition firms are often more knowledgeable about customers' substitution patterns. Firms also tend to have a better understanding regarding the effects and, clearly, purpose of their actions. And firms often also enjoy information advantages regarding the effectiveness of potential remedies. The discussions in the Google Shopping case around proper market definition, the effects and intentions of Google's conduct, as well as around the effectiveness of the chosen remedies may illustrate how severe these information deficits are for competition authorities.

The DMA policy proposal addresses the information gaps in several ways. The traditional three-step competition procedure is replaced by one single step: identification of gatekeepers and their core platform services. The quantitative criteria regarding turnover, market value and active users set out in Article 3 (2) are reasonably easy to verify and not subject to major information problems. In addition, platforms must notify the Commission once they fulfil the criteria. This reduces the Commission's information costs. The more qualitative criteria set out in Article 3 (6) are not that easy. But the investigative tools in Articles 15, 19 and 21 should help to reduce information asymmetries, including through on-site inspections by appointed experts.

Once a platform has been designated as a gatekeeper, all of the obligations of Articles 5 and 6 apply. There is no need anymore (i) to study substitution patterns to delineate markets, (ii) to analyse the effects of a firm's particular conduct and (iii) to design and test appropriate remedies – tasks that slow down traditional competition cases. According to Article 7, the Commission can directly specify the compliance measures for Article 6 obligations without having to test remedies proposed by the gatekeeper, as has been the case in past competition cases. This significantly reduces the information requirements for the European Commission. Moreover, the obligations in Article 5 are reasonably easy to monitor on the basis of evidence provided by business users of platforms. They are not expected to encounter significant informational problems. Hence, information asymmetries are, by and large, negligible with respect to Article 5.

The same is not true for Article 6 obligations. For example, the prohibition of self-preferencing and preferential display of own services, cannot be easily observed or proven and may require substantial amounts of data for enforcement. Commission-appointed experts who can undertake on-site inspections, including access to data and algorithms (Article 21), combined with investigative powers in Articles 16 and 19, should facilitate this.

The proposed DMA contains no formal concept of reversal of burden of proof, as the obligations set out in Articles 5 and 6 apply quasi-automatically. Articles 8 and 9 leave limited room for exemptions. While we propose to introduce an efficiency defence in section 2.2 of this report for obligations on the grey list, we also propose that the burden of proof rests with the gatekeeper. In addition, we propose that interim measures according to Article 22, in case of risks of irreversible damage, may be adopted until the Commission accepts

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<sup>70</sup> See [https://ec.europa.eu/competition/elojade/isef/case\\_details.cfm?proc\\_code=1\\_39740](https://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=1_39740)

a platform's efficiency defence, so as to prevent platforms from strategically proposing efficiency defences with the purpose of postponing compliance with Articles 5 and 6 obligations. Interim measures are a classic tool that has rarely been used at the European level but becomes more relevant in fast-moving digital markets.

The ability to access databases and algorithms and appoint independent experts and auditors (Article 21 (3)) adds an important new tool that is very relevant for digital platforms and can contribute to reducing the information asymmetry between gatekeepers and regulators, including for the purpose of monitoring the effective implementation and compliance with the obligations (Article 24). We propose that this should include embedding independent auditors within the platform in order to have continuous and direct access to the data and algorithms<sup>71</sup> and, most importantly, run behavioural experiments to evaluate the algorithm and use of the data. The auditor may be appointed by a regulatory authority. Alternatively, an external independent control authority could be set up. Implementation and governance modalities for such a new tool matter in order to avoid any regulatory capture of the auditors and experts. As auditors need to strike a balance between obtaining institutional knowledge and experience on the one hand and avoiding regulatory capture on the other hand, setting up rotating auditor teams with members from different firms and backgrounds may prove beneficial. Rotating teams of auditors may be more difficult to capture than single persons. This also holds for any external independent control authority where teams should rotate and be regularly restructured to achieve a proper balance between experience and "freshness". Auditors or staff from any external independent control authority should also be subject to proper "cooling off" periods. While none of these approaches is fool proof, we conjecture that it is preferable to other information gathering exercises that are more time consuming and inherently slower.

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<sup>71</sup> The UK CMA has established a Digital Markets Monitoring Unit that can launch market investigations and collect platform data on a continuous basis. <https://www.gov.uk/government/news/new-competition-regime-for-tech-giants-to-give-consumers-more-choice-and-control-over-their-data-and-ensure-businesses-are-fairly-treated>

## 9 Fair platform behaviour

In the DMA, there are two obligations for gatekeeper platforms that explicitly refer to fairness, or Fair, Reasonable and Non-Discriminatory (FRAND) treatment, one for search engines and another for app stores:

Article 6(j): provide to any third-party providers of online search engines, upon their request, with access on fair, reasonable and non-discriminatory terms to ranking, query, click and view data in relation to free and paid search generated by end users on online search engines of the gatekeeper, subject to anonymisation for the query, click and view data that constitutes personal data;

Article 6(k): apply fair and non-discriminatory general conditions of access for business users to its software application store designated pursuant to Article 3 of this Regulation.

There are no details on what FRAND means, except for a somewhat vague reference in Recital 57 of the DMA: "Pricing or other general access conditions should be considered unfair if they lead to an imbalance of rights and obligations imposed on business users or confer an advantage on the gatekeeper which is disproportionate to the service provided by the gatekeeper to business users or lead to a disadvantage for business users in providing the same or similar services as the gatekeeper".

We support FRAND access to markets and market level data, including FRAND provisions for access to search engine data and app stores. Such market level data has the potential to increase market efficiency by improving decisions of market participants. However, the DMA does not elaborate on what FRAND terms might be nor how they might be implemented.

To operationalise FRAND terms, gatekeepers might legally and technically separate vertical services on top of the platform from the infrastructure that constitutes the platform. On search, social networks, and markets, separation might create a dividing line between ad services, applications, and merchandise from the search, networks, and markets themselves. If a platform publishes terms of access to the infrastructure then its own entry into any of these vertical markets, on top of the platform, would occur on identical terms. Failure to publish equal access terms could bar the platform from entry in a vertical market. Importantly, this should include markets, such as advertising, where the platform has already entered. Either the gatekeeper must publish equal terms of access for all others or exit that market. Publication of this standard also provides both regulators and competitors a set of criteria with which to hold the gatekeeper accountable.

While (competition) lawyers might be more familiar with "fairness" terminology, measuring it is somewhat difficult to reconcile with economic jargon. Fairness can be equated with distributional or equity issues<sup>72</sup>. Implicitly, DMA policy proposals use "fairness" in at least two ways:

Unfair = harmful. This raises several questions: Harmful compared to what standard? Harmful to whom? Welfare economics distinguishes between Pareto optimality, when an action does not reduce the welfare of any economic agent but may increase the welfare of some, and Kaldor-Hicks optimality when an action may increase the net welfare of a group of agents though it may reduce welfare for some. The latter criterion allows winners to (theoretically) compensate losers and still be better off. Is platform behaviour acceptable when it increases overall societal welfare but negatively affects the welfare of some users? Network externalities generate welfare gains for society but access conditions to the network may penalise some users.

Unfair = unequal. Again the questions come up: compared to what standard of equality? How do we operationalise this? For example, is a 70/30 sharing rule for ad revenue between publishers and intermediaries, or between app developers and app store owners, a fair deal? Should consumers, whose time is consumed, participate in the equation for sharing advertising revenue?

This leads to issues of both (i) what form might harm take and (ii) by what criterion should it be measured. We can identify at least three forms of harm from monopolistic behaviour: (a) welfare losses from reduced market access, the so-called Harberger welfare triangles that represent deadweight losses for society, (b) welfare re-allocation between producers and consumers in monopolistically priced markets that generate an unfair monopoly rent for producers and reduce consumer surplus, and (c) opportunity losses due to a set of inferior transactions relative to those possible under less restricted offerings. For example, monopolistic

<sup>72</sup> Equity concerns are explicitly recognised as a reason for regulatory intervention in the European Commission's "Better Regulation Guidelines". [https://ec.europa.eu/info/law/law-making-process/planning-and-proposing-law/better-regulation-why-and-how/better-regulation-guidelines-and-toolbox\\_en](https://ec.europa.eu/info/law/law-making-process/planning-and-proposing-law/better-regulation-why-and-how/better-regulation-guidelines-and-toolbox_en). Four different notions of fairness include reward in proportion to contribution (e.g. Shapley Value), exogenous rights (e.g. one person one vote), compensation (e.g. providing shelter after a natural disaster), and fitness (e.g. giving a ball to a soccer player). See: Moulin, H., Fair Division and Collective Welfare, MIT Press, Cambridge, 2004.

pricing of access to app stores (the 30% entry price “tax”) reduces the supply of app-based services and re-allocates part of the revenue from developers and consumer surplus to the app store owner.

Comparative *consumer welfare* is the standard most commonly used in both Europe and the U.S. In traditional bilateral exchange, between producers and consumers, this standard works well to promote fair outcomes and create welfare: monopoly power, externalities, and information asymmetry each manifest as clear reductions in consumer welfare. These market failures can be corrected by competition, property rights, and transparency that render the roles on each side of a transaction symmetric among producers and among consumers respectively and thus fair. The consumer welfare test, however, performs less well in the context of gatekeepers in a dynamic sense. Platform interactions constitute a trilateral exchange in which the platform, as gatekeeper, simultaneously enjoys market access, network effect, and informational advantages not available to third party producers. Consumer welfare can be high, even subsidised, at the expense of producers. This standard might still be usefully applied conditional on inclusion of dynamic, not merely static, efficiency. If producers are unduly taxed by the platform, their incentive to enter and their capital for invention are cut. A consumer welfare standard must consider innovation and not just competition. Absent good counter-factual models of dynamic innovation, promoting fairness in static models can usefully consider the welfare on both sides of a market, producers and consumers, as a more robust criterion.

Some experts suggested that the Shapley value creates a formula for the fair distribution of value<sup>73</sup>. The Shapley theorem states that there exists only one value imputation of a super-additive cooperative game achieved by a grand coalition. The allocation of the surplus to parties is based exclusively on the value each party brings into the game. This solution has two key fairness-related elements. First, the Shapley value takes the average across all marginal contributions to any possible sub-coalition that a player may join. All orderings of forming the grand coalition have equal probability of occurrence. Second, any differences in shares across players are due to differences in their average marginal contributions. The utilitarian value of a player to coalition is the only criterion that matters here. Helpfully, luck, unfair practices or abuse of advantageous position do not alter the final outcome.

The Shapley value is extremely data intensive and cumbersome to calculate, costs increase exponentially with the number of players. Transaction costs related to its calculation may be higher than benefits. Still, if we cannot get it precisely right, we may get it “directionally” right. Other experts suggested that the Shapley value is only a measure of market power, not a way to distribute value fairly. Bringing greater transparency to the average value of consumer data (for example the US Dashboard Act<sup>74</sup>) may put pressure on companies to share more value with consumers. Similarly, competition introduced under in-situ access regimes (see Chapter 6.2) could also cause firms to share more value with consumers.

The discrepancy between high average and close-to-zero marginal value of consumer data may be overcome by “data unions” or pooling of personal data<sup>75</sup>. The recent history of personal information management spaces or data cooperatives is not very encouraging. Transaction costs outpace consumer benefits<sup>76</sup>, unless consumers attach extremely high subjective value to their private data. One way to reduce transaction costs might be to automate data consent decisions by machine readable terms of service.

Recent empirical work on Google Search and Facebook suggests the existence of high consumer surplus value generated by these services<sup>77</sup>. Only part of this surplus is captured by the platforms through advertising. There is debate on the robustness of the methodology of these papers, though they rely on actual consumer behaviour, not stated preferences. As noted above, the absolute value of static consumer surplus is not a good measure of market competition in platform markets. A recent empirical paper based on Facebook user data shows however that more competition and splitting the market in two could harm consumer surplus<sup>78</sup>.

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<sup>73</sup> Clarkson, G. and Van Alstyne, M., *The Social Efficiency of Fairness*, mimeo, 2020.

<sup>74</sup> “Designing Accounting Safeguards To Help Broaden Oversight and Regulations on Data”. See <https://www.congress.gov/bill/116th-congress/senate-bill/1951/text>

<sup>75</sup> See chapter 5 (Data as labour) in Posner, E. A. and Weyl, E. G., *Radical markets: Uprooting capitalism and democracy for a just society*, Princeton University Press, Princeton, 2018.

<sup>76</sup> Krämer, J., Senellart, P., and de Streel, A., *Making data portability more effective for the digital economy: Economic implications and regulatory challenges*, CERRE Report, Brussels, 2020.

<sup>77</sup> Brynjolfsson, E., Collis, A., and Eggers, F., *Using massive online choice experiments to measure changes in well-being*, *Proceedings of the National Academy of Sciences*, Vol. 116, No 15, 2019, pp. 7250-7255; Brynjolfsson, E., Collis, A., Diewert, W. E., Eggers, F. and Fox, K. J., *GDP-B: Accounting for the value of new and free goods in the digital economy*, NBER Working Paper No. w25695, 2019.

<sup>78</sup> Benzell, S. and Collis, A., *How to Govern Facebook: A Structural Model for Taxing and Regulating Big Tech*, mimeo, 2020.

Redistribution of surplus value through taxation has little impact on consumer welfare and does not affect competition. Neither Coasian regulation nor Pigouvian taxation approaches appear to have major impact compared to other interventions.

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