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### Digital conglomerates and EU competition policy

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# DIGITAL CONGLOMERATES AND EU COMPETITION POLICY

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## Abstract

*The paper analyses firms' motivations and the competitive effects of digital conglomerates with the relevant industrial organisation and strategic management literature. On that basis, it makes recommendations to improve the methodologies and modes of operation of EU competition policy in the digital sector. The paper first shows that some of the characteristics of the digital economy may explain digital conglomerates. On the supply-side, those include the important economies of scope in product development as product innovation and development are often modular and based on shared inputs (such as data, hardware and software). On the demand-side, those include the consumer synergies generated by product ecosystems.*

*The paper then shows that the pro- and anti-competitive effects of conglomerates are amplified in the digital economy. Regarding the anti-competitive effects, bundling may allow big platforms to envelop their smaller competitors in adjacent markets, raise entry barriers for innovating entrants or soften competition by increasing differentiation. The control of key sharable inputs may increase the incentives to refuse access or decrease the costs of an anti-competitive product proliferation strategy. Those effects are even stronger when the digital conglomerate has achieved the position of gatekeeper for access to customers or to specific products. Those anti-competitive effects should always be balanced with the positive welfare effects of digital conglomerates that are equally amplified. Moreover, conglomerate acquisitions of innovative start-ups may in some circumstances lead to a decrease in innovation, which is detrimental to welfare.*

*The paper finally recommends some improvements in the enforcement of EU competition policy in digital markets. (i) Dynamic efficiency should be prioritised over static efficiencies; (ii) Market power should be assessed dynamically by focusing more on potential competition and by defining markets for sharable inputs and innovation capabilities; (iii) The theories of harms should be adapted to the firms' incentives in the digital economy, in particular the anti-competitive bundling theories need to be extended, the threshold to impose access under the essential facilities doctrine needs to be adapted to the characteristics of data and the effects of a merger on innovation need to be directly taken into account; (iv) Antitrust intervention should be quicker and more agile and the standard of proof should not only take into account the risk of type I and type II errors but also the cost of those errors.*

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# 1. INTRODUCTION

One of the main and most intriguing characteristics of the digital sector is the resurgence of conglomeratism.<sup>2</sup> The big-tech companies have achieved high degrees of diversification, entering weakly related – or even sometimes totally unrelated – new markets. For example, Amazon has expanded from the online sale of books to the sale of almost everything online, including payment services, cloud computing, as well as movie and television series production and distribution.<sup>3</sup> Google has expanded from search to maps, operating systems, mobile and personal computing devices, and cloud services.<sup>4</sup> Facebook has diversified into photo and video social networking with Instagram, messaging with WhatsApp, and virtual reality with Oculus VR.<sup>5</sup>

Those diversifications happen either organically when the firm expands directly into new markets; through financing, via corporate venture capital funds,<sup>6</sup> of new start-ups; or through mergers and acquisitions. Indeed, over recent years we have observed a wave of conglomerate mergers and acquisitions in the digital economy. Some flagship mergers have made headlines. For example, Facebook acquired WhatsApp for \$19bn in 2014, Google took control of Motorola Mobility in the same year for \$12.5bn, and Microsoft bought LinkedIn for \$26bn in 2016.<sup>7</sup> In parallel to these large operations, the big-tech

companies also buy many successful or promising start-ups on a very large scale. For example, for the year 2017 alone, Alphabet, Amazon, Apple, Facebook and Microsoft spent a total of \$31.6bn on acquisitions of start-ups.<sup>8</sup> Over the period 2001-2018, Google alone has been buying one firm per month, every month.<sup>9</sup>

Therefore, competition in the digital sector today is heavily shaped by this competition between large digital conglomerates.<sup>10</sup> Big-tech players all keep strongholds where they have been historically powerful: search for Alphabet/Google (with more than 90% market share worldwide),<sup>11</sup> e-commerce for Amazon (with a market share close to 50% in the US),<sup>12</sup> social networks for Facebook (with a market share close to 70%).<sup>13</sup> They also compete with one another on multiple markets and with smaller rivals focusing on specific markets.

This conglomeratism and competition takes place against the background of rapid innovation and dynamic market forces. As shown by the 2018 EU Industrial R&D Investment scoreboard,<sup>14</sup> ICT producers and service providers are among the top investors in R&D and the big Internet firms are among the most important investors in these categories.<sup>15</sup>

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<sup>2</sup> See Petit (2016) and Lim (2017).

<sup>3</sup> See “Conglomerates Didn’t Die. They Look Like Amazon”, *The New York Times*, 19 June 2017.

<sup>4</sup> See [www.en.wikipedia.org/wiki/List\\_of\\_Google\\_products](http://www.en.wikipedia.org/wiki/List_of_Google_products).

<sup>5</sup> See [www.en.wikipedia.org/wiki/Facebook](http://www.en.wikipedia.org/wiki/Facebook).

<sup>6</sup> Such as Google Ventures for Alphabet, Microsoft Ventures and Microsoft Accelerator, Facebook Inc. Investment Arm, Amazon.com Inc., Investment Arm.

<sup>7</sup> For a list of mergers and acquisitions by Facebook, Google and Microsoft, see [www.en.wikipedia.org/wiki/List\\_of\\_mergers\\_and\\_acquisitions\\_by\\_Facebook](http://www.en.wikipedia.org/wiki/List_of_mergers_and_acquisitions_by_Facebook), [www.en.wikipedia.org/wiki/List\\_of\\_mergers\\_and\\_acquisitions\\_by\\_Alphabet](http://www.en.wikipedia.org/wiki/List_of_mergers_and_acquisitions_by_Alphabet), and [www.en.wikipedia.org/wiki/List\\_of\\_mergers\\_and\\_acquisitions\\_by\\_Microsoft\\_respectively](http://www.en.wikipedia.org/wiki/List_of_mergers_and_acquisitions_by_Microsoft_respectively).

<sup>8</sup> *The Economist*, 26/10/2018, “American tech giants are making life tough for startups”.

<sup>9</sup> [www.en.wikipedia.org/wiki/List\\_of\\_mergers\\_and\\_acquisitions\\_by\\_Alphabet](http://www.en.wikipedia.org/wiki/List_of_mergers_and_acquisitions_by_Alphabet).

<sup>10</sup> Petit (2016) talks of competition between “mologopolists”: conglomerates that have strong market power (at the extreme, a “monopoly”) in a given historical market, while competing with one another in other (weakly related) markets as “oligopolists”, hence the word “mologopolists”.

<sup>11</sup> [www.gs.statcounter.com/search-engine-market-share](http://www.gs.statcounter.com/search-engine-market-share).

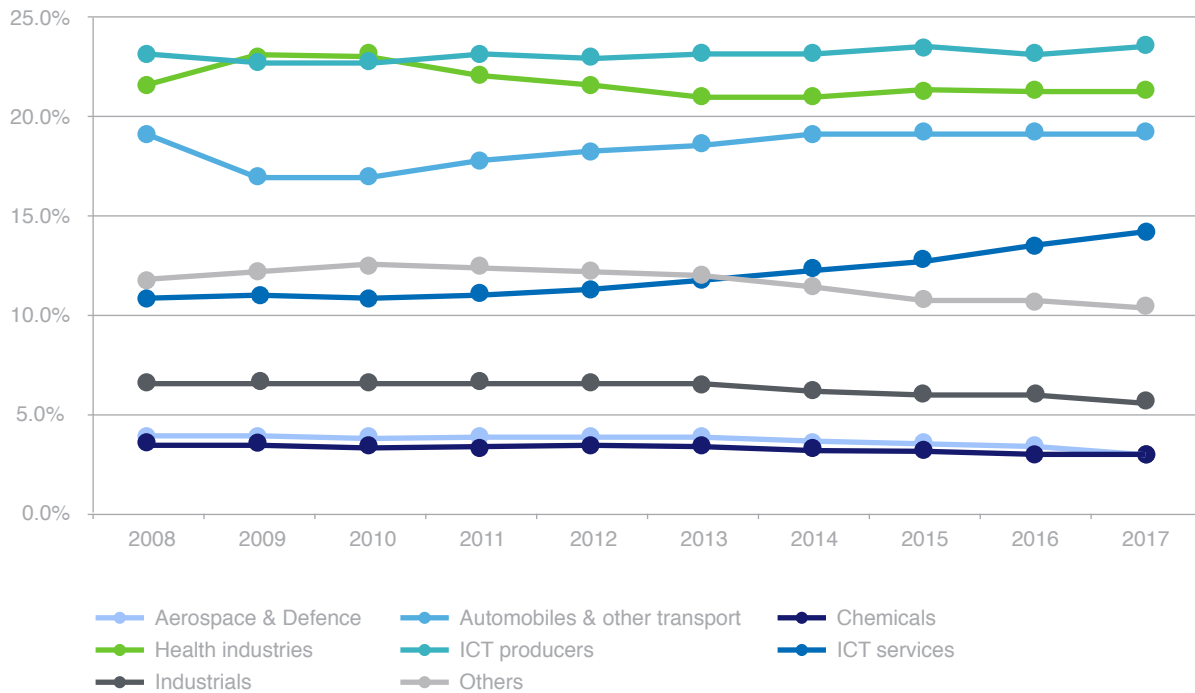
<sup>12</sup> [www.techcrunch.com/2018/07/13/amazons-share-of-the-us-e-commerce-market-is-now-49-or-5-of-all-retail-spend/?guccounter=1](http://www.techcrunch.com/2018/07/13/amazons-share-of-the-us-e-commerce-market-is-now-49-or-5-of-all-retail-spend/?guccounter=1).

<sup>13</sup> [www.gs.statcounter.com/social-media-stats](http://www.gs.statcounter.com/social-media-stats).

<sup>14</sup> [www.iri.jrc.ec.europa.eu/scoreboard18.html](http://www.iri.jrc.ec.europa.eu/scoreboard18.html)

<sup>15</sup> See **Figure 4.1.** of the 2018 EU Industrial R&D Investment scoreboard.

**Figure 1: Evolution of the global R&D share for industrial sectors**



Note: Calculated for a sample of 1674 companies for which data on R&D, Net Sales and Operating Profits are available for the entire period 2008-2017.

Source: The 2018 EU Industrial R&D Investment Scoreboard. European Commission, IRC/DG RTD

Innovations are based on, and can be developed with, innovation capabilities, as explained by strategic management literature (Teece, 2009). In the digital sector, innovation capabilities include data, skills, computing power and risky capital.<sup>11</sup> As we will show, there may be link between the rise of conglomeratism and the reliance on innovation capabilities.

This paper analyses firms' motivations and the competitive effects of digital conglomeratism, along with the consequences for antitrust methodologies and enforcement. The paper aims to strengthen the relevance and the effectiveness, in the digital

sector, of competition policy as a key instrument to promote innovation, safeguard market contestability and ensure a level playing field between the different actors of the sector. To do so, we rely on industrial organisation literature on conglomerate diversification and on the characteristics of digital firms, as well as on strategic management literature. The paper is structured as follows: after this introduction, Section 2 deals with the main motivations and effects of digital conglomerates, then Section 3 deals with the implications for competition methodologies and enforcement and, finally, Section 4 briefly concludes and summarises.

<sup>16</sup> This is why the Coordinated Plan on Artificial Intelligence of December 2018 aims to promote skills, computing power and European data space: Communication from the Commission of 7 December 2018, COM(2018) 795\_Petit (2016:23) also observes that human resources represent the main R&D investment for digital firms.

## 2. MOTIVATIONS AND EFFECTS OF DIGITAL CONGLOMERATES

Before discussing the implications for competition policy of the emergence of digital conglomerates, we need to understand the motivations of digital firms to expand as conglomerates, that is, to diversify in markets that are weakly related to their primary markets. Since the rise of digital conglomerates seems to echo the conglomerates of the 1960s and 1970s, we start by looking at the industrial organisation literature that tried to understand the conglomerate mergers taking place 50 years ago, and see what lessons we can draw from the past. We also discuss two factors which play a strong role in the emergence of digital conglomerates: economies of scope in product development (supply-side synergies) and ecosystem linkage (demand-side synergies). Then, we consider competitive effects that can arise via: (i) bundling and envelopment, (ii) economies of scope in product development and product line expansion, (iii) the emergence of gatekeepers, and (iv) pre-emptive acquisitions – and discuss their policy implications.

### 2.1. Firms' motivations for digital conglomerates

#### 2.1.1. Lessons from past conglomerate mergers

##### (i) *Past theories for conglomerate mergers*

A conglomerate merger can be defined as a merger between neighbouring markets<sup>17</sup> with non-substitutable products that are offered to the same group of consumers.<sup>18</sup> The EU Non-Horizontal Mergers Guidelines define conglomerate mergers as '*mergers between firms that are in a relationship which is neither horizontal (as competitors in the same relevant market) nor vertical (as suppliers or customers)*.'<sup>19</sup>

Before the wave of conglomerate mergers that we are witnessing today in the digital economy, a major rise

of conglomerate mergers took place in the 1960s and the 1970s, when the large firms of the time diversified their operations by acquiring firms in unrelated (or weakly related) markets.<sup>20</sup> This wave of conglomerate mergers generated a lot of debate, both in policy and academic circles, first to understand the motivations of firms to expand in seemingly unrelated markets and the profitability of this strategy and, second, to assess whether competition authorities should be concerned by this specific type of merger, which *a priori* did not seem motivated by an increase of market power. In particular, it generated a vibrant stream of literature in industrial organisation, whose objective was to understand the rationale for these mergers.

In what follows, we present the main economic theories that have been proposed to explain the wave of conglomerate mergers of the 1960s and 1970s, based in particular on the literature review

<sup>17</sup> Neighbouring markets are markets of products that are “weak” substitutes, in the sense that the substitution between the products is not strong enough to place them in the same antitrust market (Neven, 2007).

<sup>18</sup> Since the merger involves products that do not belong to the same antitrust markets, the conglomerate effects that can arise are only indirect. Also, these indirect effects are at play only to the extent that the products are offered to a same group of consumers (Neven, 2007). This definition thus excludes conglomerates that would serve different consumer groups with different products.

<sup>19</sup> Commission Guidelines of November 2007 on the assessment of non-horizontal mergers under the Council Regulation on the control of concentrations between undertakings, O.J. [2008] C 265/6, paras 5 and 91. Similarly, the US Merger Guidelines consider that “non-horizontal” mergers include vertical mergers and conglomerate mergers, and thus conglomerate mergers are mergers that are neither horizontal nor vertical.

<sup>20</sup> See, e.g., Montgomery (1994). She notices that though we have observed various merger waves in the 20th century, it is a regularity over time that large firms are highly diversified.

by Montgomery (1994). We will then discuss to what extent these theories are useful to understand the current rise of digital conglomerates. Note that some of these theories are relevant to explain the development of a firm as a conglomerate both through external growth (mergers and acquisitions) and internal growth (diversification within the firm).

By and large, a firm decides to diversify in a neighbouring market via merger or acquisition, leading to a conglomerate merger, if the benefits of this diversification outweigh the associated costs. The benefits accrue from operating a new business, with possible synergies for existing lines of business. The costs relate to transaction and organisational costs for the expanding firm (as organisational costs may increase with size), and costs that may arise due to agency conflicts between managers and shareholders. Costs may also include the opportunity costs of foregone alternative diversifications or use of capital and other resources, in particular when the diversification is risky. Once again, note that diversification can also be achieved via internal growth; we will come back below to this trade-off for a firm between internal and external growth.

Mueller (1977) argues that since they concern weakly related markets, it is difficult to explain conglomerate mergers only by the motivation to increase market power and/or economic efficiencies, which are standard explanations for horizontal mergers. As a response to this apparent puzzle, various theories have been proposed in industrial organisation literature to explain the conglomerate mergers of the 1960s and 1970s. We discuss below four main theories: agency, market power, resource and, finally, internal capital market.<sup>21</sup>

The *agency theory* argues that the conglomerate mergers are not profit-maximizing, but rather the

result of some misalignment between the incentives of firms' shareholders and managers (Montgomery, 1994). According to this theory, managers advocate for conglomerate mergers that serve their personal objectives and not their shareholders' interests. One view among many along these lines is the theory of managerial entrenchment (Schleifer and Vishny, 1989), according to which a manager follows a diversification strategy that maximizes the firm's demand for her specific skills. If the agency theory is correct, the conglomerate mergers of the 1960s and 1970s should have been unprofitable. However, Matsusaka (1993) provides some empirical evidence that this is not the case: for a sample of conglomerates, he finds that the value of the holdings increased after the announcement of diversification.

The remaining theories take the view that conglomerate mergers were motivated by profit gains for holdings. The theories then try to explain the source of profits from diversification in neighbouring markets.

The *market power theory* argues that, although conglomerates diversify into seemingly unrelated markets, this may indirectly increase their market power. For example, this may be because high degrees of diversification increase multi-market contacts, thereby facilitating (tacit) collusion between conglomerate firms.<sup>22</sup> Conglomerate firms may also use cross subsidies between different lines of business to increase their market power in a given market, for example through predatory pricing. This is sometimes referred to as the "deep pocket" theory.

The *resource theory* argues that firms diversify in response to an excess capacity in specific "resources". In this theory (Penrose, 1959), a firm's resources can be of different types: production factors, some specific goods or services that the firm has produced, or the knowledge that the firm has accumulated over time.

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<sup>21</sup> Other theories have been proposed to explain the conglomerates mergers of the 1960's and 1970's. Our objective here is not to provide a comprehensive overview of all these theories, but rather to focus on those which are considered as the main theories today. For example, the (very simple) 'life-cycle' theory (Audretsch, 1989) argues that firms in a mature or declining industry have an incentive to expand in new markets that are at an early stage of their life cycle,

with high prospects in terms of growth of activity and profits (but one may wonder why a firm would have to wait for its activity to decline to enter a promising new market).

<sup>22</sup> See Bernheim and Whinston (1990) for a theory of tacit collusion with multi-market contacts.



The firm expands as long as its resource capacity is not fully employed. One might wonder though why the firm expands via mergers and acquisitions, rather than selling its excess capacity, on the market, to outside firms. One possible answer proposed by Teece (1980, 1982) is that there are market failures in the trade of intangible specific assets, which leads firms to favour diversification over the selling of assets.

The *internal capital market theory* argues that firms diversify as a response to the imperfection of external capital markets (Williamson, 1970). When access to external funds is limited, conglomerate mergers allow the creation of internal capital markets<sup>23</sup> that may be more efficient, for example because they are less prone to asymmetric information problems (Alchian, 1969) or because the capital supplier has control rights (Gertner, Scharfstein and Stein, 1994).<sup>24</sup> There is some empirical evidence in the economic literature that among the conglomerate mergers of the 1960s and 1970s, those focused on the creation of an internal capital market were indeed more profitable (see, e.g., Hubbard and Palia, 1999 and Klein, 2001). However, one might argue that if the conglomerates have access to cheaper capital, then they could lend funds to outside firms or invest in them, rather than acquiring them.

It is worth noting that diversification in neighbouring markets can be achieved not only via mergers and acquisitions, but also via internal development, i.e., a firm faces a trade-off between external and internal expansion (Deneffe and Wakker, 1996).<sup>25</sup> While the benefits from diversification are similar in both cases, each mode of diversification has its own costs. Mergers and acquisitions imply external transaction costs that can be avoided when the firm develops the same projects internally. Conversely, it may be more costly for a firm to conduct a project internally rather

than externally, for example because the firm lacks the necessary resources to conduct the project internally or because the development of the project within the firm requires organisational changes (e.g., setting up an autonomous entity to alleviate cannibalization concerns)<sup>26</sup> that may be costly to implement.

## ***(ii) Implications for current digital conglomerates***

Which lessons from the past are relevant today to understand diversification in the digital economy? The *agency theory*, which has been a popular explanation for the conglomerate mergers of the 1960s and 1970s, does not seem to explain very well the rise of digital conglomerates. Many big-tech companies (e.g., Google, Facebook, Amazon...) are indeed managed by their founders, or the managers are important shareholders in the firm.

The *market power theory* states that firms expand into neighbouring markets because it allows them to increase their market power indirectly. This motivation may be at play for digital conglomerates. In particular, we will argue below that digital firms have incentives to create product ecosystems, which increase differentiation and soften competition.

The *resource theory* provides another interesting framework to analyse the expansion of digital players in neighbouring markets. Clearly, digital players have important resources of various kinds that may be at a moment of time in excess capacity, which would then, according to this theory, incentivize the firms to expand. For example, Amazon invested very early in huge data centres to support the development of its e-commerce core activity. Amazon decided later on to enter the market for cloud services with Amazon Web Services, and it is said that excess capacity was one of the reasons.<sup>27</sup> Digital companies also heavily

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<sup>23</sup> In corporate finance, it is common to distinguish providers of capital that are external to the firm (e.g., banks or venture capitalists) and providers of capital that are internal to the firm (i.e., headquarters, which allocate capital to their business units).

<sup>24</sup> Another financial explanation of the emergence of conglomerates is the idea that they reduce the likelihood of bankruptcy by mitigating risks over a portfolio of diversified operations (Lewellen, 1971).

<sup>25</sup> Note that internal and external growth are not necessarily exclusive: a firm

may decide to develop a project through both mergers and acquisitions and use of internal resources.

<sup>26</sup> See, for example, Christensen (1997) who argues that it is difficult for an incumbent firm to develop a disruptive innovation without setting up an autonomous organization.

<sup>27</sup> See, for example, "Servers for Hire", *MIT Technology Review*, September 28, 2006, [www.technologyreview.com/s/406593/servers-for-hire/](http://www.technologyreview.com/s/406593/servers-for-hire/).

recruit talent, which is considered a key resource, in particular in technology and software, and accumulate knowledge in the same areas. Diversification into new innovative activities could be a reaction to excess capacity in these key resources, although strong evidence (apart from the anecdotal evidence cited above) is still missing. More generally, digital firms use or generate inputs – such as consumer data – that can be used in a variety of products. We will come back to this point below when we discuss the role of economies of scope in product development in digital markets.

Digital conglomerates also have *internal capital markets* that may allow new ventures to obtain funding more easily than from external capital markets. Gertner et al. (1994) argue that one of the advantages of internal capital markets compared to external capital markets is better asset redeployability. If a given unit fares poorly, the management of the firm can decide to redeploy the assets to other units or projects, at a lower cost than with external financing (in the latter case, it would imply selling the assets). In the digital sector, which is highly innovative, firms engage in new product development which is very risky in nature. One could argue that the ability to reallocate assets if the project fails may represent an advantage for the firm, and may thus favour the conglomerate format. In addition, we observe that many digital firms invest in new start-ups through venture funding, which also seems consistent with the internal capital market theory.

### 2.1.2. New theories for the digital economy

Apart from the theories on market power, resources or internal capital market discussed above, we argue that two key characteristics of the digital economy may also explain the rise of digital conglomerates: on the supply side, the presence of important economies of scope in the development of digital products and services; on the demand-side, consumption

synergies derived by consumers when adopting product ecosystems. These two characteristics favour the development of wide product portfolios by digital players.

#### **(i) Supply-side: Sharable inputs, modular design and economies of scope in product development**

- *The role of economies of scope in product development*

As economies of scope play a central role in digital markets, in particular for product development, they may be a key factor explaining the diversification strategies we observe. In a nutshell, economies of scope exist when it is less costly to produce two or more products or services within a single firm than by separate firms (Panzar and Willig, 1981). Economies of scope exist due to the presence of sharable inputs in the production process, that is, inputs that can be used to produce one output, but can also be (re-)used to produce other outputs.<sup>28</sup> Examples of sharable inputs include a shared production platform that can be used or re-used for different outputs, human capital, knowledge, etc. The concept of sharable input is thus close to the idea of resources in excess capacity that we discussed above – since it can easily be shared, a sharable input can be viewed as a resource with low capacity constraints.

When the production process involves important economies of scope, a single-product firm may find it cost-efficient to expand into a multi-product firm. For example, once it has incurred the sunk cost of a shared production platform, it may be efficient for an automobile manufacturer to produce several car models for different consumer segments, rather than a single model. If the different products belong to weakly related or unrelated markets, the firm can benefit from economies of scope to expand into a conglomerate firm. However, as Teece (1980) notes, economies of scope will lead to the expansion of the firm only to the extent that the markets for sharable

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<sup>28</sup> Panzar and Willig (1981) state an equivalence result between the presence of economies of scope and that of sharable inputs.

inputs do not function properly; otherwise, the firms could trade their excess capacity in sharable inputs instead of diversifying into new markets. Teece (1980) argues that for at least two types of sharable inputs, integration is the most efficient mode of organization for the firm: proprietary knowhow, and indivisible sharable assets.

Economies of scope can arise not only at the production stage, but also at the product development stage. Firms benefit from economies of scope in product development if some components of their existing products or services can be re-used for creating new product or service variants, that is, if these components are sharable inputs for product development in the sense of Panzar and Willig (1981), and if there are economies of scale in producing them.

We think that digital firms benefit from strong economies of scope in product development. Digital products are typically designed through combinations of hardware and software. For example, Google Search's service to the consumer involves hardware inputs (servers and network equipment) and software inputs (the search algorithm and its implementation). Hardware and software products have a modular design:<sup>29</sup> they consist of independent building blocks or components (chips, software modules, algorithms, etc.), whose interactions are ruled by standardized interfaces. Since the production of digital product modules involves large fixed costs and thus economies of scale, there are economies of scope in product development for digital products. For example, Apple has developed an in-house range of processors, which are used and re-used across its product line for iPhones and iPads: they represent a sharable input in product development, which reduces the development cost of each new device.<sup>30</sup> Similarly, Google accumulates knowledge on artificial intelligence, another sharable input, in various projects and this knowledge can be used across a wide variety of products and services.<sup>31</sup>

Eaton and Schmitt (1994) show how the presence of economies of scope in product development can promote diversification and concentrated market structures. They adopt Hotelling's model of a linear city to represent the different consumer tastes as well as the possible product designs. Eaton and Schmitt then consider that a firm can invest in a "flexible production system", allowing it to produce a "basic" product that can be modified to produce different product "variants". Modifying the basic product to produce a variant involves a cost of switching the production process from one variant to another and a per-unit cost of modification. The latter is proportional to the distance between the basic product and the variant, whereas the former is not. In this model, there are economies of scope if the most efficient method of production consists of producing fewer basic products than the number of goods in the product line, that is, if the firm produces variants and not only basic products. The authors also show that with a perfectly inelastic demand and sequential entry, there is entry deterrence and monopolisation of the market.

As argued above, digital products and services use inputs that are to some extent sharable and thus imply economies of scope in product development.<sup>32</sup> Because of the modularity of their product design, a digital output (e.g., a map service) can also be used as an input (e.g., for a navigation system). Besides, one could argue that some digital sharable inputs (e.g., hardware, software or algorithms) are general-purpose technologies,<sup>33</sup> which can be implemented in a wide variety of products and services and allow firms to expand into weakly related markets. For example, server farms allowed Amazon to deliver e-commerce services worldwide from the beginning, but also, later on, to distribute movies and television programs online to their customer base, two *a priori* unrelated activities. Therefore, the diversification possibilities allowed by modular design and economies of scope in product development seem to be of a much larger magnitude for digital products than for traditional products.

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<sup>29</sup> See Sanchez and Mahoney (1996), p. 67, for a list of modular products, which includes hardware and software.

<sup>30</sup> See [www.en.wikipedia.org/wiki/Apple-designed\\_processors](http://www.en.wikipedia.org/wiki/Apple-designed_processors).

<sup>31</sup> See [www.char.gd/blog/2017/googles-deep-focus-on-ai-is-paying-off](http://www.char.gd/blog/2017/googles-deep-focus-on-ai-is-paying-off).

<sup>32</sup> On the implications of modular design on product innovation in digital markets, see Bourreau, Doğan and Manant (2007).

<sup>33</sup> On the characteristics of the general purpose technologies, see the seminar paper of Bresnahan and Trajtenberg (1995)

- *Data as a sharable input for product development*

The possibility to collect large amounts of data on consumers can affect the incentives of digital companies to develop new products.<sup>34</sup> First, data can be used as an input and allows firms to develop new products and services. Since data is non-rival, it can be viewed as a sharable input for product development, leading to economies of scope in product development. As in the model of Eaton and Schmidt (1994), firms may develop a basic product allowing them to collect consumer data, and then use the data to develop product variants or even totally new products.<sup>35</sup> For example, Google collects large amounts of data about what consumers are looking for via its existing services (e.g., search),<sup>36</sup> and it could thus potentially develop new services where it observes high demand and low supply. A US furniture maker, Williams-Sonoma, recently filed a complaint against Amazon in December 2018, which seems to fit with this story. According to the plaintiff, Amazon predicts which products consumers want based on the data that it collects on its platform, introduces these products under its brand name, and finally biases its search algorithm to favour its own products against those of independent merchants.<sup>37</sup> Zhu and Liu (2018) published an empirical study of Amazon's entry strategy in product categories. Using data on 163,853 products sold on Amazon.com in 22 subcategories, the authors show that Amazon is indeed more likely to enter popular product categories, which the company can easily detect.

Prufer and Schottmüller (2017) propose a model which illustrates the importance of data in product innovation and diversification strategies. They build up a model of dynamic R&D competition, where the

amount of data collected from consumers reduce the firm's marginal cost of innovation, an effect that they refer to as "data-driven indirect network effects". Their main focus is on the competition in a given market,<sup>38</sup> but they also investigate the impact of data-driven indirect network effects on the incentives of a digital company to enter new markets. More specifically, they study the entry strategy of a firm that benefits from data-driven indirect network effects, which then enters another market that is not initially data-driven. They show that, if entry costs are not too high, the firm can leverage its market power in its primary market to dominate the new market. This happens in particular if the markets are what the authors call "connected", which means that the data collected in one market allows the improvement of product quality in another. With data-driven network effects, firms thus have incentives to diversify into connected markets. Note that two markets can be connected because they share the same data, while being weakly related from a product market definition point of view.

Second, platforms may wish to expand into new markets to acquire new data on unattached consumers or complementary data on attached consumers. They may try to follow consumers across multiple devices (e.g., from laptop to phone to tablet) or across multiple applications (think of Facebook login), to better monetize their attention to online advertisers.<sup>39</sup> They may also decide to diversify to tap into new market segments. For example, some have argued that Facebook bought Instagram in 2012 because the latter app was more popular among young consumers.<sup>40</sup> With this type of strategy, firms aim to become "gatekeepers" for access to consumers; we will come back below to the implications of this type of strategy.

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<sup>34</sup> Data can be an input for digital firms, allowing the personalization of products and services, to improve recommendation or search algorithms, to predict consumer demand, etc. Data can also be an output, for example when it is sold to data brokers. On the role of data in the business models of digital firms, see Lambrecht et al. (2014) and Bourreau, de Streel and Graef (2017).

<sup>35</sup> Note that data being non-rival goods, the incremental cost of using the data in the design of a new product is close to zero. We could thus also argue that data have some aspect of a general-purpose technology.

<sup>36</sup> See, for example, Varian, Hal (2011), "Predicting the Present", available at [www.thinkwithgoogle.com/marketing-resources/predicting-the-present/](http://www.thinkwithgoogle.com/marketing-resources/predicting-the-present/).

<sup>37</sup> See Hal Singer, "How to stop Amazon from swallowing the Internet", *Forbes*, 28 January 2019.

<sup>38</sup> They show that due to the presence of data-driven network effects, the market will tip and one firm will eventually dominate.

<sup>39</sup> See, e.g., Adam Tanner, "How Ads Follow You from Phone to Desktop to Tablet", *MIT Technology Review*, 1 July 2015.

<sup>40</sup> See, Tim Wu, "The case for breaking up Facebook and Instagram", *The Washington Post*, 28 September 2018.

A relevant question is whether the data collected by firms to engage in product diversification and/or improve the monetization of consumer attention can constitute a sustainable competitive advantage for those firms. Using the resource-view of the firm, Lambrecht and Tucker (2015) discuss whether big data can provide a competitive advantage, which amounts to determining whether it is inimitable, rare, valuable and non-substitutable. They argue that big data is neither inimitable nor rare, that there are alternative sources of data for competitors, hence substitute data exists, and finally that big data is not valuable by itself. They conclude that big data cannot constitute a sustainable competitive advantage by itself, but that it has to be combined with other resources, e.g., organization resources. However, the Report by the German Monopolkommission (2015) comes to the opposite conclusion, stating that “[h]aving control over and being able to analyse large volumes of data can be a crucial competitive advantage”. We believe that it is not possible to make a general conclusion on whether or not big data confers a competitive advantage. As we have already argued (Bourreau et al, 2017), the question should rather be assessed on a case-by-case basis: in some contexts, data may constitute a competitive advantage, and in others it will not be the case.

To sum up, due to their modular design and economies of scale in producing digital modules (hardware, software, data, etc.), digital products exhibit strong economies of scope in product development. As a consequence, digital firms have incentives to expand their product lines, in particular via internal diversification. Acquiring new ventures may also allow digital companies to use modules from their targets across their product portfolios, reinforcing the magnitude of economies of scope.

Finally, note that if sharable inputs and modular design facilitate the expansion of a firm into a multi-product entity, they can also create opportunities

for cooperation in product development between competing firms. An example is given by open source software: individuals, but also very often private software companies, cooperate in the development of open source software, because software modules can easily be shared between cooperating parties and are interoperable.<sup>41</sup>

## **(ii) Demand-side: Consumption synergies and product ecosystems**

Economies of scope correspond to synergies generated on the supply side from the operation of multiple product lines. In addition, synergies can also arise from the demand side. For example, consumers can positively value purchasing different products or services from the same seller. Such consumption synergies may be of different types. First, they may derive from *bundling*, for example if consumers value receiving a single bill. They may also be due to lower transaction costs (e.g., lower search costs for individual products). Second, consumption synergies can be endogenous to firms’ decisions. Firms can invest to create ties or linkages between their different products (even possibly unrelated products), to increase the complementarity between them. For example, the Apple Watch can only be used together with an Apple iPhone and not with a smartphone from another manufacturer. With this linkage, a consumer derives an additional benefit (a consumption synergy) when buying the iPhone and the Apple Watch together, even though these two products are not sold as a bundle by Apple. We will refer to such a set of products sold separately by a firm, which generates consumption synergies for consumers when bought together, as a *product ecosystem*.<sup>42</sup>

There is some analogy between consumption synergies derived from ecosystem linkage and economies of scope: in the same way as economies of scope derive from the presence of sharable inputs in the production process, consumption synergies from

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<sup>41</sup> On the relationship between modular design and cooperation in product development, see, e.g., Bourreau, Doğan and Manant (2016).

<sup>42</sup> We assume positive (net) synergies. One could argue that product ecosystems may also generate disutility for consumers, for example due to privacy issues (the

consumer can be tracked across multiple devices) or the risk of being locked-in into an ecosystem. However, we expect that consumers will adopt product ecosystems only to the extent that the associated benefits are larger than the costs.

ecosystem linkage are due to shared functionalities between products in the ecosystem. However, demand-side (consumption) synergies differ from supply-side synergies (economies of scope) in that consumers may have different valuations for consumption synergies (Chen and Rey, 2018). For example, some consumers may have a high opportunity cost of time, others a lower opportunity cost of time, and thus they will perceive different benefits from one-stop shopping. Or, consumers may place differing value on the linkage between the iPhone and the Apple Watch. It may even be the case that some consumers dislike such linkage, while others value it. Via a merger, firms selling individual products can extract some – but not all (due to consumer heterogeneity) – consumer surplus from consumption synergies. More generally, this gives firms incentives to diversify into product markets that can generate such consumption synergies.

Koca (2018) considers consumption synergies as a strategic decision for firms. By investing into a linkage between its different products and/or services, a firm can create a product ecosystem. More specifically, Koca proposes a model where an ecosystem firm provides two products, a base product and a category product, and can invest to increase the complementarity (or, equivalently, decrease the substitutability) between the two products, hence “link” the two products together. The ecosystem is a monopolist for the base product market and faces competition from a rival single-product firm in the market for the category product (the “category firm”). The firms compete in prices and quality innovation. She shows that ecosystem leverage can hurt the category firm when the base and category products are substitutes, but that it benefits the category firm when they are complements.

Whether they take the form of consumption synergies (Chen and Rey, 2018) or ecosystem linkage (Koca, 2018), the presence of demand-side synergies gives another incentive to firms to expand their product lines or to create product ecosystems, to capture some of the value generated for consumers by consumption synergies. In turn, this gives them incentives to expand into new markets to develop product ecosystems. Of course, this is only the gross benefit from diversification, which thus has to be balanced with the associated costs, for example in terms of transaction costs.

## 2.2. Competitive effects of digital conglomerates

After having reviewed the firms’ possible motivations for conglomerate diversification, we now turn to the pro- and anti-competitive effects of conglomerates. In the EU, conglomerate mergers are analysed with a positive prior and, generally, are not considered to lead to competitive problems.<sup>43</sup> The only major concern mentioned in the Commission Guidelines arises in case of tying and bundling. Neven (2007) explains why contingent sales (i.e., bundling, tying or full-line forcing)<sup>44</sup> should be the only major concerns of conglomerate mergers. He also argues that the presence of economies of scale and scope (for suppliers or buyers) should represent a minor concern because economies of scale and scope make the merging parties more efficient (which is pro-competitive), while any potential harm to competition could only arise in the unlikely event that the competitor exits the market.<sup>45</sup> His views are reflected in the practice of competition authorities, which generally do not consider economies of scale and scope as anti-competitive.<sup>46</sup> However, the specific characteristics of the digital industries may change the effects of conglomerate diversification and affect the balance between pro- and anti-competitive effects, possibly

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<sup>43</sup> Commission Guidelines on Non-Horizontal Mergers, para 92; Case T-5/02 *Tetra Laval v. Commission*, ECLI:EU:T:2002:264, para 155. Similarly in the U.S., today antitrust authorities consider that conglomerates mergers do not raise any specific antitrust concerns *per se*.

<sup>44</sup> Full-line forcing occurs in a vertical chain when an upstream manufacturer forces a distributor to carry the full range of products in its product line. It is equivalent to bundling, but in a vertical relationship context.

<sup>45</sup> As explained by Motta and Vasconcelos (2005).

<sup>46</sup> Neven (2007) also mentions two other minor concerns: (i) spillovers benefits from strong to weak brands in neighboring markets and (ii) residual substitution and potential competition between products in neighboring markets.

requiring a change in the current positive prior. In what follows, we discuss the potential anti-competition effects of digital conglomerates. First, we analyse bundling strategies in the context of product ecosystems and platform markets. Second, we argue that economies of scope in product development could allow a firm to foreclose competition, in particular by making strategies of product proliferation less costly and through the control of essential inputs. Third, we discuss the possibility for digital platforms to act as gatekeepers and the potential impact on market outcomes and welfare. Fourth, and finally, we argue that the possibility of pre-emptive motives should be considered when assessing conglomerate mergers, and in particular the possibility of “killer acquisitions”. However, those anti-competitive effects should always be balanced with the pro-competitive effects of digital conglomerates.

### 2.2.1. Bundling, product ecosystems and envelopment

#### (i) *Bundling and product ecosystems*

Bundling or tying is often motivated by efficiency gains, on the demand side (e.g., due to lower search costs for consumers) or on the supply side (e.g., due to lower transaction costs for firms). However, there may also be more strategic motivations for bundling. In particular, there is the concern that bundling or tying can allow a firm to foreclose rivals. For a long time, the view of the Chicago school prevailed, according to which bundling to foreclose competition cannot be a profitable strategy. However, the argument brought forth by the Chicago School relied on specific assumptions, in particular that the tied product market is perfectly competitive. Whinston (1990) first showed that bundling can be a profitable entry deterrence strategy when the tied markets are differentiated, and his contribution was followed by many others.<sup>47</sup>

- *Raising entry barriers for innovating entrants*

Since our main focus is on the effects of conglomerates on product innovation, via economies of scope in

product development or ecosystem linkage, the relevant question in our context is the potential impact of bundling or tying on innovation. Choi and Stefanadis (2001) show that bundling may negatively affect innovation by making innovative entry more difficult to achieve in markets for system goods. They study a model where an incumbent firm has *ex-ante* a monopoly in two product markets. The two products are perfect complements and constitute a system good. The incumbent faces potential entry in both product markets. In each market, a potential entrant can enter only if its product R&D project succeeds; if it does, the entrant introduces a rival product with a lower marginal cost than the incumbent. Before the entrants make their R&D investments, the incumbent can decide to bundle its two complementary products. If it does so, each entrant now needs the other entrant to succeed in R&D to be able to enter the market, since consumers consume system goods only, not individual goods. Intuitively, this reduces the profitability of entry, and hence the R&D investments of entrants and the probability of entry.

In a similar vein, Carlton and Waldman (2001) study a model where an incumbent firm faces potential entry in a primary market and a market for a complementary good. They show that tying allows the incumbent to preserve its monopoly position in the primary market and to extend its monopoly into the market for the complementary good. The idea is that tying reduces the potential demand for the complementary good of the competitor, and with fixed costs of entry, deters entry. Since the entrant has an incentive to enter the primary market to stimulate the sales of its complementary product, tying also deters entry into the primary market.

Choi (2004) highlights another mechanism through which bundling by an incumbent firm can reduce R&D by entrants: he shows that bundling can serve as a commitment to be more aggressive in R&D, making potential entrants less aggressive as a consequence. More specifically, Choi analyses the impact of bundling or tying on R&D investments of a multi-product incumbent and a rival firm. The

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<sup>47</sup> Our objective here is not to review the broad economic literature on bundling and tying. For comprehensive overviews, see for example Church (2004), Carlton and Waldman (2005) and Neven (2007).

incumbent has a monopoly in one product market and faces a rival in another product market. In a first stage, the incumbent can decide to bundle its two products together. Then, in a second stage, the incumbent and the entrant engage in cost-reducing R&D. Finally, in a third stage, they compete in prices. With bundling, the incumbent commits to be more aggressive in R&D investments. Indeed, Choi shows that bundling increases the R&D investment by the incumbent and decreases the R&D investment by the rival. Therefore, the incumbent obtains lower costs than its rival after the R&D stage. Bundling is then profitable for the incumbent if the gains due to the cost advantage obtained through R&D exceed the losses due to intensified price competition.

This research on bundling and innovation shows that bundling practices, which are common among digital players, may negatively affect the ability of potential entrants to innovate and enter the market through product innovation. In a recent interview, Jean Tirole develops a view along these lines, explaining that “[b]undling practices by the tech giants are also of concern. A start up that may become an efficient competitor to such firms generally enters within a market niche; it's very hard to enter all segments at the same time. Therefore, bundling may prevent efficient entrants from entering market segments and collectively challenging the incumbent on the overall technology.”<sup>48</sup>

- *Softening competition and increasing market power with increased differentiation*

Another question raised by our discussion of consumption synergies and product ecosystems is what could be the potential effects of the development of such product ecosystems on competitive outcomes.

Chen and Rey (2018) show that consumption synergies can increase the differentiation of product lines between multi-product firms (which result from mergers in their paper) and their rivals. Chen and Rey propose a model with two independent product markets and Bertrand competition pre-merger. A conglomerate merger generates consumption synergies when the consumers buy the two independent products from the merged entity, due to the benefits of one-stop shopping. These consumption synergies are heterogeneous across consumers. The merger has two effects on equilibrium prices. First, the merger softens price competition, because it creates a differentiation between the product portfolios of the firms: the merged entity's bundle is perceived as high quality due to the consumption synergies, whereas the independent products are perceived by comparison as low quality. Second, as the two independent products are perceived as complements by consumers after the merger, and this is not internalized by the independent firms, they tend to set their prices too high, which benefits the merged entity and harms the independent firms. Because of these price effects, with pure bundling, the merger decreases consumer surplus.

Therefore, when there are potential consumption synergies or product ecosystem linkage, a conglomerate merger may have adverse effects on consumer surplus by inflating prices through increased differentiation (though the harm from higher prices should be balanced with the benefits from increased differentiation). It is worth noting that these effects may arise even if the firms do not bundle their products: to the extent that ecosystem linkage creates value for consumers when they buy the different ecosystem products together, the ecosystem firm is perceived by consumers as vertically differentiated from category firms, which relaxes price competition.

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<sup>48</sup> Jean Tirole, *Federal Reserve Bank of Richmond: Econ Focus*, Fourth Quarter 2017, available at [www.richmondfed.org/-/media/richmondfedorg/publications/research/econ\\_focus/2017/q4/interview.pdf](http://www.richmondfed.org/-/media/richmondfedorg/publications/research/econ_focus/2017/q4/interview.pdf). Also Jean Tirole, *Regulating the Disrupters*, 1 January 2019, available at [www.livemint.com/Technology/Xs-gWUgy9tR4uaoME7xtITI/Regulating-the-disrupters-Jean-Tirole.html](http://www.livemint.com/Technology/Xs-gWUgy9tR4uaoME7xtITI/Regulating-the-disrupters-Jean-Tirole.html): “New entrants into online markets often begin with a niche product; if it proves successful, they expand to offer a much wider range of products and services. Google began with only its search engine before it became the company we know to-

day; Amazon started by selling books. So what matters is whether new entrants can access the market in the first place. If a newcomer has a single original product that is better than what the incumbent offers, the incumbent might want to block it from gaining even a partial foothold in the market. The incumbent will do so not to improve its short-term profits, but to prevent the newcomer from later competing in areas where the incumbent occupies a monopoly position, or to stop the newcomer from allying with the dominant firm's competitors.”



## (ii) *Digital platforms and envelopment*

Big-tech companies often act as intermediaries, platforms or marketplaces. In addition to significant economies of scale and scope in product development and production, their dominance over their respective markets can thus also be explained by the fact that the products and services that they deliver to consumers exhibit significant network effects, which represent another source of increasing returns to scale.

In particular, big-tech companies have adopted the multi-sided platform business model for some of their products and services.<sup>49</sup> As multi-sided platforms, they act as intermediaries between different distinct groups of users, and the value of joining the platform for a given group is influenced by the participation of users in the other groups (i.e., there are indirect network effects). But we could adopt a broader definition of a platform as a product or service characterized by strong direct and/or indirect network effects, and not necessarily multi-sided.<sup>50</sup> For example, a platform such as Spotify is not strictly speaking multi-sided, but with a larger number of users, it can collect larger amounts of data and improve its algorithms, which leads to a higher quality of service. In turn, this makes the service more attractive to users – we can thus say that the value of the service for a given consumer increases (indirectly) with the number of users, via the improvement of algorithms.<sup>51</sup>

Platforms may have various incentives to expand into new markets. One possible motivation is what Eisenmann et al. (2001) call “platform envelopment”. According to the authors, “envelopment” occurs when a dominant platform enters a new market pioneered by an entrant platform and forecloses the new entrant. Overlapping user bases between the dominant platform’s primary market and the new market and shared components or modules between the two products, make entry into the new market feasible for

the dominant firm. First, the dominant platform can leverage its customer base from its primary market to the new market, and thus benefit from significant network effects when it enters the new market; these network effects can be of much larger magnitude than those enjoyed by the entrant. In addition, because of shared components or modules, operating the two platforms together may entail significant economies of scope. In Eisenmann et al. (2001)’s framework, platform envelopment corresponds to pure bundling: the dominant platform bundles its existing platform service with a new platform service similar to the platform that it wishes to envelop.<sup>52</sup> Through pure bundling, the attacking platform can then foreclose the rival platform in the target market. When the dominant’s platform and the target’s platform are weak substitutes or unrelated, Eisenmann et al. (2001) argue that significant economies of scope are a pre-condition for envelopment by bundling to succeed.

In digital markets, when platforms have acquired a large customer base in a first market, they may adopt an envelopment strategy to expand. For example, once successful in the taxi business, Uber expanded to the food delivery business with Uber Eats, leveraging its user base of Uber drivers and taking advantage of shared components (software, etc.).

However, the potential competitive harm from envelopment is mitigated if consumers can multi-home: in this case, even if the incumbent platform bundles its primary service with the new service, there might still be room for the rival platform. Choi (2010) proposes a model which shows that this intuition does not always hold and that even with multi-homing, envelopment (or bundling) can harm competition. More specifically, Choi studies the effects of bundling in a model where two horizontally differentiated two-sided platforms compete for consumers and content providers, and both types of participants can multi-

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<sup>49</sup> See Armstrong (2006), Caillaud and Jullien (2003) and Rochet and Tirole (2003 and 2006). Generally, Belleflamme and Peitz (2015).

<sup>50</sup> Direct network effects arise when the value of the product for a consumer increases (directly) with the number of users. Indirect network effects arise when the value of the product increases with the number of complementary products, which is itself influenced by the number users -- and thus, the value of the product increases (indirectly) with the number of users.

<sup>51</sup> Lerner (2014).

<sup>52</sup> Eisenmann et al. (2001) give the example of Microsoft, which bundled Windows Media Player with Windows operating system to enter in the late 1990’s the market of media players, then dominated by the platform Real of Real Networks.

home. When consumers multi-home, Choi assumes that they perceive a certain degree of redundancy or duplication between the two platforms, which is assumed exogenous. In other words, each platform has some exclusive content for the consumers and the value from multi-homing comes from access to the exclusive content of the additional platform.

One platform, the incumbent platform, also offers to the consumers a good that is essential (necessary) to use any platform.<sup>53</sup> The incumbent has monopoly over the provision of this good, which it can tie with its platform product for consumers. If consumers could not multi-home, tying would immediately lead to tipping and lock-in: the incumbent's platform would attract all consumers and the entrant platform would have no room to enter the market. The possibility of multi-homing thus limits *a priori* the ability of the incumbent to win the market.

When multi-homing is possible for consumers, Choi shows that tying leads more consumers to multi-home (i.e., to join both competing platforms). This is because, when the incumbent ties its essential and platform goods, some consumers, who would not have chosen the incumbent's platform without tying (i.e., who would have single-homed to the rival's platform) now multi-home. On top of that, the entrant platform reacts to tying by lowering its price, which expands its reach. Tying is profitable for the incumbent platform, but harms the rival platform. Hence, the incumbent can obtain a competitive advantage via tying. In addition, Choi shows that tying decreases consumer welfare.<sup>54</sup> Therefore, even if consumers multi-home, platform envelopment or bundling can allow an incumbent platform to gain a competitive advantage over rival platforms. This happens if the incumbent offers a good that is (sufficiently) essential to consumers, as shown by Choi (2010). One could argue that some core services of digital conglomerates have this feature.

However, bundling may also have efficiency effects in multi-sided markets, as highlighted by Amelio and Jullien (2012). The authors study a model where a two-sided platform would like to set negative prices on one side of the market to attract a large number of users on this side, which are extremely valuable to the other side, but where the platform is constrained in setting non-negative prices.<sup>55</sup> Amelio and Jullien show that tying the platform's service with a good that is valuable to the side to be subsidized allows the platform to implement implicit subsidies for the platform's service, which is a profitable strategy for the platform and can also in some cases benefit consumers.

With a monopoly platform, Amelio and Jullien show that mixed bundling (whereby the platform offers both a bundle of the tied good and the platform service, as well as the tied good alone) increases participation on both sides of the platform and thus increases consumer surplus, compared to a benchmark situation without bundling.

In a duopoly context, however, tying also has strategic effects. More precisely, Amelio and Jullien show that increasing the implicit subsidy via bundling has two different effects on the market outcome. On the one hand, since bundling allows the implementation of implicit subsidies, the incumbent platform that offers a mixed bundle attracts more users on the subsidized side than the rival platform (which cannot use implicit subsidies). On the other hand, the implicit subsidy represents an opportunity cost for the incumbent platform on the profitable side: by attracting users on the profitable side, the platform also encourages users on the subsidized side to join, due to the cross-group network effects, but these subsidized users come at a loss for the platform due to the implicit subsidy. Because of this opportunity cost, tying on one side (the subsidized side) may soften competition on the other side (the profitable side). From a consumer point of view, consumers on the subsidized side

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<sup>53</sup> In the motivating example proposed by Choi (2010), the platforms are media players and the essential good is the operating system necessary to run any media player (e.g., Windows).

<sup>54</sup> Multi-homing makes consumers more homogeneous, and therefore facilitates consumer surplus extraction by the incumbent platform, which offers the essen-

tial good. Since multi-homing increases with tying, consumer surplus is reduced. However, at the same time, total welfare increases with tying.

<sup>55</sup> Setting negative prices may also lead to opportunistic behaviour from consumers, constraining the platform to set non-negative prices.

always benefit from tying, whereas consumers on the profitable side may either benefit or be harmed. The overall effect of tying on total consumer surplus then depends on the relative levels of cross-group network effects between the two sides.<sup>56</sup> If cross-group network effects are symmetric between sides, total consumer surplus decreases with tying. By contrast, if subsidized consumers do not value the participation of users on the other side, consumer surplus increases on both sides.

From a policy point of view, the main take-away from the paper of Amelio and Jullien is that tying by a platform can have efficiency effects which are due to its specific two-sided nature, but it should be assessed on case-by-case basis.

To sum up, the economic literature on envelopment and bundling suggests that when a platform is dominant in one market, it may have the ability to leverage its network effects and take advantage of economies of scope to enter into new platform markets. Bundling in platform markets may have both efficiency effects (e.g., due to the possibility to implement implicit subsidies) and anti-competitive effects. One could also argue that, due to the network and feedback effects in platform markets, the efficiency and anti-competitive effects of bundling are amplified.

### 2.2.2. Economies of scope, product proliferation and essential components

As we discussed above, economies of scope in product development allow digital companies to create new products with low development costs, using sharable resources or components from other products.

A dominant firm could use this flexibility in product development to enter all the market niches where it faces an entry threat. This type of entry deterrence strategy, which is often called product proliferation,

was first analysed by Schmalensee (1978). He adopts the circular city model and shows that in the presence of an entry threat, an incumbent firm may introduce a larger number of varieties than it would otherwise, in order to deter entry.<sup>57</sup> However, this is a costly strategy: the incumbent firm has to develop as many products as there are market niches in order to deter entry. But, with economies of scope in product development, the incumbent could develop a basic product and then as many product variants as necessary to deter entry from competitors, which makes the product proliferation strategy less costly to implement.

Amazon's entry into product categories (Zhu and Liu, 2018) may possibly be seen as a product proliferation strategy. Wen and Zhu (2017) provide empirical evidence on how potential competitors react to this type of strategy. They study the impact of Google's entry threat on the Android app store, on the innovation and pricing strategies of independent app developers.<sup>58</sup> They show that when faced with an entry threat from Google in their market niche, independent app developers react by reducing their innovation efforts and increasing their prices. The evidence suggests that this is because developers switch their resources to unaffected areas (i.e., to other apps).

A second concern is that a dominant firm may have control over a basic product or a basic component, which is essential to obtain economies in scope in product development, and then develop new, related or unrelated, products. To the extent that it is not economically feasible for competitors to replicate the basic product or component, the dominant firm may have a strong competitive advantage over its competitors for the expansion of its product line and the creation of product ecosystems. In other words, some basic products or components may be essential facilities for product development.

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<sup>56</sup> In their model, total welfare increases if network effects are strong enough.

<sup>57</sup> Note that product proliferation involves both efficiency effects (as it increases variety for consumers) and anti-competitive effects (since it aims at deterring entry of competitors).

<sup>58</sup> To identify Google's entry threat, they use the fact that Google very often follow Apple's introduction of new apps, and therefore Apple's entry in a new app niche is supposed to generate an entry threat from Google on the Android app store.

One could argue that data could constitute such an essential component. As we discussed above, data can be collected from usage of a basic primary product, and then used to evaluate consumer demand for new products (the Amazon example), to train algorithms implemented into new products (think of digital personal assistants), to customise products to consumer needs, etc. In other words, to the extent that product innovation is data-driven (Prufer and Schottmüller, 2017), data may constitute an essential component for product innovation. We might then be concerned that through the control of this essential component, a dominant firm may be able to foreclose competition.

### 2.2.3. Digital platforms as gatekeepers

Some argue that online firms derive their market power from their position as “gatekeepers”.<sup>59</sup> A loose definition of a gatekeeper would be that it is an economic agent that can control access by a group of users to some goods or another group of users.

To be more precise, we can distinguish two different types of situation. In the first situation, the gatekeeper controls access by third-party firms to its users. For example, an online social network such as Facebook has, to some extent, control over access to its users by online advertisers, in particular for the consumers who spend most of their time on the social network. In the second situation, the gatekeeper controls access to content, products and/or services. For example, Google Search controls access of users to Web content via its ranking algorithm, Spotify controls access to its large catalogue of music titles through its personalized recommendations, etc. We discuss below the economic implications for each type of gatekeeper.

#### **(i) Gatekeepers for access to users**

When there is a potential bottleneck for access to users (for advertisers, sellers, etc.), a digital platform may have an incentive to expand into new markets to broaden the engagement of its customers with a larger

line of products and services. By providing a wide array of products and services, the firm can lock in its customers into its product ecosystem. To the extent that the firm monetizes its customers to third-parties in some way (e.g., their attention to advertisers, their data to data brokers, etc.), the firm can become a gatekeeper for access to its customers.<sup>60</sup>

Wu (2018) argues that digital companies such as Facebook or Google are best described as attention brokers. They offer products and/or services to consumers to capture their attention and then resell consumer attention to attention seekers, and in particular online advertisers. He argues that antitrust authorities should take into account these attentional markets when they assess competition in digital markets, in particular for merger review.<sup>61</sup>

Pratt and Valletti (2018) propose a framework that formalizes some of these ideas and highlight an economic mechanism through which gatekeepers can be harmful for consumers. They develop a theoretical model where consumers can join various online advertiser-supported platforms. Each consumer uses a subset of these platforms (i.e., multi-homes). There is also an incumbent producer and an entrant producer that compete to sell a product to consumers. They advertise their products on the various platforms and it is assumed that each platform displays one targeted ad, and only one, to each consumer. The consumers know the incumbent’s product, but are not aware of the entrant’s product. The only way for the entrant producer to enter the market is thus to advertise on platforms to inform consumers of its existence. Consumers benefit from becoming aware of the entrant’s product, which provides them with a higher utility than the incumbent’s product, and this increases total surplus too. However, entry reduces the profit of the incumbent producer. Each platform runs a second-price auction for each one of its users. The winner, which is either the incumbent or the entrant producer, displays a targeted advertisement to that user. Therefore, for a given user, there are as many advertising auctions as the number of platforms she engages with.

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<sup>59</sup> See, for example, the policy papers by Lim (2017) and Lynskey (2018).

<sup>60</sup> See, e.g., Lim (2017).

<sup>61</sup> On the economics of attention markets, see also Evans (2017).

Prat and Valletti show that in this environment, the probability that a consumer eventually becomes aware of the entrant's product depends on the number of platforms she engages with. If the consumer uses only a few platforms, in equilibrium all ads displayed to the consumer come from the incumbent producer and the consumer does not become aware of the entrant's product. Conversely, if the consumer uses a high number of platforms, the entrant displays at least one ad to the consumer, who then buys its product rather than the incumbent's product. The idea behind this result is that the incumbent producer has an incentive to deter entry of its rival in the product market, because entry reduces its profit. To deter entry, the incumbent has to win all advertising auctions on every platform where the consumer participates, in order to keep the consumer unaware of the rival's product. Intuitively, the cost of this entry deterrence strategy increases with the number of platforms where the consumer participates, which explains the result.

Under some assumptions, Prat and Valletti further show that the aggregate consumer surplus is decreasing with platform concentration. With this result in mind, this framework suggests that a merger between online platforms is going to reduce consumer welfare if it leads to a concentration of consumers' attention among a fewer number of platforms.

From a policy point of view, two main lessons can be derived from the analysis of Prat and Valletti. First, their analysis suggests that in order to assess the competition in online platform markets, one should take into consideration its impact on product markets through online advertising. Second, whether concentrated platform markets induce concentrated product markets will depend on the overlap of customer bases, and thus in particular on whether consumers multi-home. If they do, the type of strategy that they highlight is likely to disappear.

## **(ii) Gatekeepers for access to products and services**

A second type of situation where digital platforms can act as gatekeepers occurs when platforms have control over the consumption of content, products, or services by their users. To the extent that consumers do not have any other alternative, gatekeepers may have the ability to steer consumers towards products or services that are not the best match for them. One incentive to do so would be, for example, to steer consumers towards offers that generate higher profits for the platform. Another incentive would be to favour in-house offers (e.g., in-house content for a content platform).

The economic literature has investigated the incentives of a platform to steer its consumers towards some offers and away from others. Hagiu and Jullien (2011, 2014) develop a general framework where an intermediary platform acts as a gatekeeper for consumers to access differentiated products.<sup>62</sup> The platform has the ability to divert consumers towards their least preferred product, which may be profitable for the platform to do, if this product generates larger revenues. They show that the intermediary faces a trade-off when biasing its recommendations to consumers between higher revenues and lower participation and activity on the platform. Competition may be a remedy, but only to the extent that competition is very intense. A low level of competition may actually reinforce the intermediaries' incentives to steer. This is because, due to the competitive pressure, competing platforms are less able to gain from increased consumer participation, compared to a monopoly platform.

The ability of a platform to steer its consumers on one side of its market may also affect its relationship with the other sides. For example, Bourreau and Gaudin (2018) study the music streaming market and show with a theoretical model that a streaming platform such as Spotify could use its recommendation system strategically to intensify competition between content

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<sup>62</sup> See also de Cornières and Taylor (2014), who analyze the impact of vertical integration on steering.

providers, by threatening content providers that consumers would be steered away from their content if they charge high royalties. Hunold et al. (2018) provide empirical evidence of this type of strategy for the online travel agency (OTA) market. They show that OTAs manipulate search results to discipline hotels and discourage them from setting low(er) prices on competing channels.

To sum up, by expanding its range of products and services, a digital firm can achieve the position of gatekeeper, for access to its customer base by third parties, such as advertisers or sellers, or for access to its portfolio of products or services. If consumers mainly use the gatekeeper's ecosystem of products and services (i.e, single-home), the gatekeeping position provides market power to the firm, for example for setting the conditions of access to third parties.

#### 2.2.4. Pre-emptive acquisitions and kill zone

Lim (2017) argues that pre-emption of potential competitors is one of the main motivations for diversification in the digital economy. Indeed, we observe high numbers of acquisitions of promising start-ups by digital conglomerates. Over the last ten years, the Big Five tech giants – Alphabet, Amazon, Apple, Facebook and Microsoft – have made more than 430 acquisitions.<sup>63</sup> As we mentioned above, for the year 2017 alone, they bought start-ups for a total amount of \$31.6bn. The question is how many among these acquisitions (if any) were motivated by pre-emption motives.

Business analysts recognize the existence of a pre-emption threat to new ventures. They speak of a “kill zone”,<sup>64</sup> where start-ups cannot flourish, that is, a range of products or services where incumbent digital players are likely to dominate, either by acquiring

their potential rivals or by reacting aggressively to entry by launching competing products or services.<sup>65</sup> Consequently, the argument goes, potential entrants are unlikely to obtain funding if they develop products in the kill zone. Different factors are said to favour the persistence of a kill zone:<sup>66</sup> (i) big-tech companies can collect large amounts of data that allow them to predict new trends, (ii) they can also obtain such information from their investments in start-ups, and finally (iii) many platform markets have tipped (e.g., search engines, social networks, etc.), leaving little room for potential entrants. In the end, according to this reasoning, a new entrant that wishes to grow as an independent company should avoid the kill zone, even if it has a superior technology. Note, however, that if a new entrant's objective is to be bought by a big firm eventually, it may have the opposite incentive to position its products in the kill zone.

Cunningham, Ederer and Ma (2018) propose and test a theory according to which incumbent firms pre-empt innovating firms that threaten their market positions, and terminate the development of their innovative projects, which they refer to as “killer acquisitions”. In their theoretical model, an incumbent firm can acquire a potential competitor at an early stage where the competitor's innovative project is still under development. To the extent that the new project substitutes for an existing product of the incumbent, after it has acquired its rival, the incumbent has fewer incentives to continue developing the project than the rival firm would have had. This is due to the “replacement effect” first outlined by Arrow (1962), according to which a monopolist has less incentive to innovate than firms under competition. The incumbent may therefore decide to shut down the project after the acquisition. At the same time, competition in the product market reduces the *ex-ante* profit of the incumbent, which reduces the replacement effect and thus the prevalence of killer acquisitions.

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<sup>63</sup> Asher Schechter, “Google and Facebook’s “Kill Zone”: “We’ve Taken the Focus Off of Rewarding Genius and Innovation to Rewarding Capital and Scale””, 25 May 2018, ProMarket, available at [www.promarket.org/google-facebooks-kill-zone-weve-taken-focus-off-rewarding-genius-innovation-rewarding-capital-scale/](http://www.promarket.org/google-facebooks-kill-zone-weve-taken-focus-off-rewarding-genius-innovation-rewarding-capital-scale/).

<sup>64</sup> See Schechter (2018), *op. cit.*, and “American tech giants are making life tough for start-ups”, *The Economist*, 26 October 2018.

<sup>65</sup> For example, after Snapchat turned down Facebook's acquisition offer for \$3bn, Facebook imitated some of Snapchat's key features as explained by Schechter.

<sup>66</sup> “American tech giants are making life tough for start-ups”, *The Economist*, 26/10/2018.

Cunningham et al. (2018) use data on 35,000 drug projects conducted by more than 6,700 pharmaceutical companies in the past two and half decades. They find evidence that incumbents terminate projects from acquired companies when they cannibalize their existing products: when this is the case, a project is 39.6% less likely to be continued after the acquisition compared to drugs that are not acquired (controlling for various factors that could influence the decision to continue the project). Overall, they estimate that 6.4% of the acquisitions in their sample are killer acquisitions.

The empirical part of the study of Cunningham et al. (2018) applies to the pharmaceutical industry, and it would be clearly interesting and valuable to undertake the same type of analysis for the digital sector. Note, however, that due to the presence of network effects, the competitive threat from new ventures may be different in the digital sector than it is in the pharmaceutical industry. If we believe that “*competition is just one click away*”,<sup>67</sup> an incumbent may face the risk of being totally displaced by an entrant if consumers all switch to the new rival, thereby increasing pre-emption incentives. Conversely, if consumers face large switching costs due to network effects and coordination problems, the competition threat faced by established firms will be mild, and hence also the incentives to pre-empt.

The question of whether an incumbent buying out an entrant is going to shut down the entrant’s project (leading to a killer acquisition) is analysed by the recent strand of economic literature on mergers and innovation. Federico, Langus and Valletti (2018) and Denicolò and Polo (2018) study mergers between firms that have competing projects at the development stage before the merger (e.g., the development of a similar drug), and look at the impact of a merger on firms’ R&D efforts. In particular, Denicolò and Polo (2018) analyse the incentive of the merging firms to stop one of the projects after the merger, to

avoid cannibalisation between their projects. They show that the shape of the probability of success as a function of R&D efforts determines whether the merged entity keeps the two research units active, or conversely, shuts down one of the units. Note that in this framework, the firm closes one research unit, not for pre-emptive motives, but for reasons that pertain to the efficiency of R&D.

The debate around killer acquisitions and the kill zone takes the view that some of the acquisitions are motivated by pre-emptive motives. However, one could take the other view that the acquisition of start-ups by larger firms is efficient and benefits both parties: the start-ups bring innovative ideas and skills, and the large firms bring the complementary skills and resources necessary to develop these ideas commercially. The literature on commercialisation strategies analyses this trade-off for an innovator between selling her innovation and commercialising it herself.<sup>68</sup> Teece (1986) states that the extent to which complementary assets (such as marketing or after-sales support) are needed for the commercialisation of an innovation is an important determinant of whether the innovator commercialises her invention. Gans and Stern (2003) further argue that if no competitor has control of complementary assets, integrated structures—where the innovators commercialise their own inventions—are more likely to emerge. By contrast, if established firms control complementary assets,<sup>69</sup> hybrid forms of organisation are more likely to emerge, and we can also expect that innovators are more likely to be acquired by incumbents.

To sum up, the acquisition of promising start-ups by large digital firms can be driven by efficiency motives, the large firms bringing skills and resources that are complementary to the innovation developed by the start-ups. These acquisitions could also be driven by pre-emptive motives, possibly leading to killer acquisitions, to the detriment of innovation. It does not seem reasonable to consider that all mergers and

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<sup>67</sup> See, e.g., [www.forbes.com/sites/davidwismer/2012/10/14/googles-larry-page-competition-is-one-click-away-and-other-quotes-of-the-week/#105c04a65ea1](http://www.forbes.com/sites/davidwismer/2012/10/14/googles-larry-page-competition-is-one-click-away-and-other-quotes-of-the-week/#105c04a65ea1).

<sup>68</sup> For example, see Teece (1986 and 2006) and Gans and Stern (2003 and 2010).

<sup>69</sup> Note that these complementary assets controlled by incumbents could be the essential components that we discussed above.

acquisitions are pre-emptive; but at the same time, it does not seem reasonable either to rule out this possibility entirely. We thus believe that competition authorities should consider the possibility of pre-emptive motives when dealing with mergers and acquisitions in the digital sector, in particular for innovative start-ups.

### 2.3. Interim conclusion

In this section, we first discussed the firms' motivations that may explain the rise of digital conglomerates. Looking back at the industrial organization literature on the conglomerate mergers of the 1960s and 1970s, we have concluded that three classical views on conglomerate mergers from this literature might be useful to understand the emergence of digital conglomerates: the market power view, according to which firms that expand in weakly related markets can increase their market power indirectly; the resource view, according to which firms expand to exploit excess capacity in key, firm-specific resources; and the internal financial market view, which states that a conglomerate allows the creation of an internal financial market that can be more efficient than external capital markets.

We argued that two key characteristics of the digital economy are also useful to understand the rise of digital conglomerates. First, digital products and services involve a modular design, which generates strong economies of scope in product development, and allows firms to create variants from basic products for relatively low development costs. Second, the joint consumption of digital products from the same product ecosystem may generate consumption synergies for consumers. Firms thus have an incentive to expand to create product ecosystems and generate consumption synergies, which they can then capture through higher prices.

Finally, we discussed four types of competitive concerns that may arise with digital conglomerates. First, supply-side synergies (economies of scope in product development) and demand-side synergies (consumption synergies) facilitate bundling strategies, which may have both efficiency effects (e.g., because they generate consumption synergies) and anti-competitive effects, in particular when they make entry by innovating entrants more difficult. Second, the firms controlling essential components (e.g., unique data on consumers) may have a competitive edge over potential rivals in diversifying into new product markets. Third, firms that develop as multi-product, conglomerate entities may achieve a position where they become gatekeepers for access to their consumers by third-party firms (e.g., advertisers, data brokers, sellers, etc.), giving them strong market power over these third parties. Fourth, and finally, dominant firms may decide to expand into new markets through the acquisition of promising start ups. These acquisitions may be efficient in some cases, since large firms may bring complementary skills and resources, which allow smaller firms to develop their innovations. They could also, in some cases, be driven by pre-emptive motives and be harmful to competition and innovation, in particular if after the acquisition, the innovative projects are shut down (killer acquisitions).



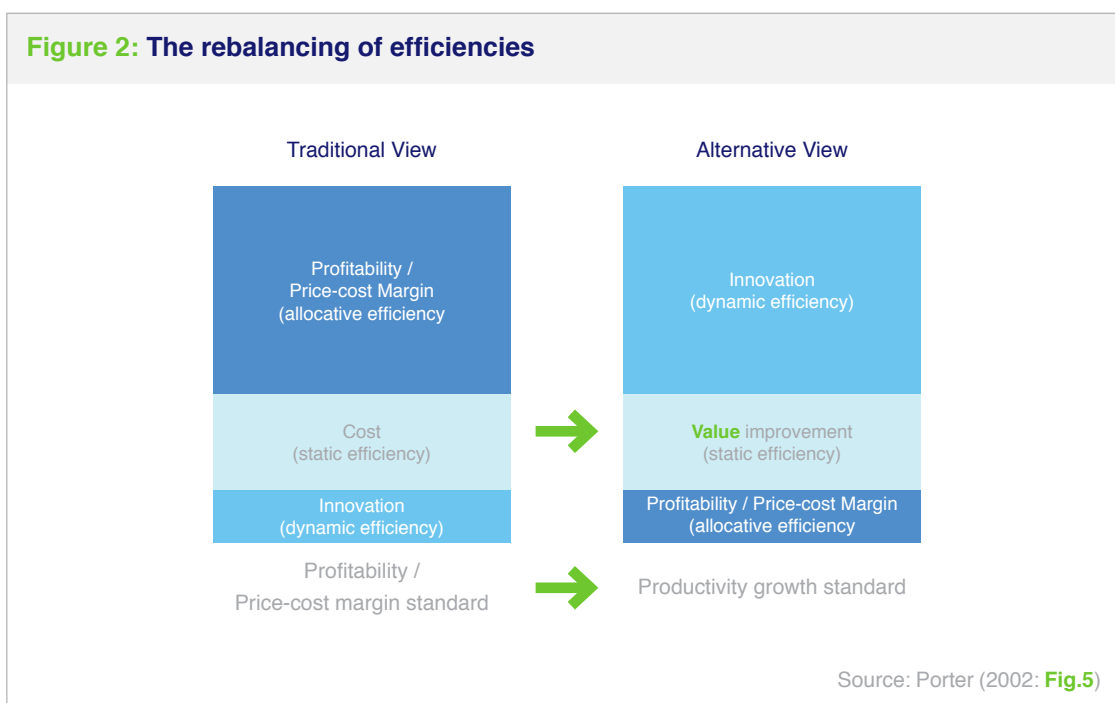
# 3. RECOMMENDATIONS TO ADAPT EU COMPETITION METHODOLOGIES AND ENFORCEMENT

After having discussed the main firms' motivations and the competitive effects of digital conglomerates, we now turn to the implications for competition policy. As noted by Commissioner Vestager, antitrust provisions are sufficiently flexible to accommodate the digital revolution as they have already adapted to several Industrial Revolutions in the past.<sup>70</sup> Nevertheless, the methodologies to enforce those flexible provisions need to reflect the characteristics and the dynamics of the digital markets and require some adaptations that we propose in this section.

## 3.1. Applying antitrust in dynamic markets: Ensuring market contestability

Given the importance of innovation in the digital sector, and more generally as the basis for economic growth,<sup>71</sup> the three main types of efficiencies (static allocative, static productive and dynamic) need to be rebalanced within the consumer welfare standard. As explained by Porter (2002), the traditional view of antitrust goals gives the highest importance to

allocative efficiency and price effects, then productive efficiency and finally the dynamic efficiency. Porter suggests reversing this order and giving the highest importance to dynamic efficiency as illustrated in **Figure 1** below. Similarly, Teece (2009:238-240) explains that dynamic competition - which is more a process relying on innovation - should be favoured over its poorer cousin, static competition - which is more an outcome manifesting itself in the form of existing products offered at low prices.<sup>72</sup>



<sup>70</sup> *Competition in a big data world*, Speech at DLD Munich, 17 January 2016, available at [www.ec.europa.eu/commission/commissioners/2014-2019/vestager/announcements/competition-big-data-world\\_en](http://www.ec.europa.eu/commission/commissioners/2014-2019/vestager/announcements/competition-big-data-world_en)

<sup>71</sup> Porter (1998).

<sup>72</sup> Also in this sense de Bijl and Peitz (2002).

To protect dynamic efficiency and innovation, Tirole suggests keeping markets contestable and contested.<sup>73</sup> Kerber (2018) and Teece (2009) suggest that antitrust authorities should move their attention from existing products and current firms' rivalry to next products, potential competition and future rivalry. Given the importance of capabilities for innovation and the economies of scope in product development explained above, antitrust authorities should focus in particular on barriers to innovation capabilities as suggested by Kerber and Kern (2014) or on entrepreneurial assets as put forward by Petit (2016). Those innovation capabilities depend on innovation paths that, in turn, vary across sectors. Therefore, as explained by Kerber and Kern (2014) and by Porter (2002), antitrust authorities should adapt their methodologies to the characteristics of each industry sector.

## 3.2. Determination of market power

### (i) Current law and practice

Traditionally, the determination of market power is done in two steps which are closely related.<sup>74</sup> First, the product market is defined mainly on the basis of demand substitution between existing products and, in a subsidiary way, on the basis of supply substitution when new suppliers can enter in the short term without entailing a significant adjustment of existing tangible and intangible assets.<sup>75</sup> Then, the market power is determined mainly on the basis of the current market

position of the firms and the barriers to entry and expansion and, when relevant, the countervailing buyer power.<sup>76</sup> In general, competition authorities tend to give more weight to the static indicators (the demand-side substitution in market definition and the current position of the firms in market power determination) than to the dynamic indicators (the supply-side substitution and the barriers to entry). This is because the former can be assessed with more certainty and better fit the static model of competition on which antitrust methodologies are largely based.

To be sure, more dynamic criteria have been designed for innovative sectors. Regarding market definition, the Commission has developed the concepts of competition in innovation which refers to R&D poles which may compete between each other depending on the 'the nature, scope and size of any other R&D efforts, their access to financial and human resources, know-how/patents, or other specialised assets as well as their timing and their capability to exploit possible results.'<sup>77</sup> The Commission observes that R&D poles may be identified when the process of innovation is well structured, like in the pharmaceutical industry, but that the concept will normally not be used when the process of innovation is not clearly structured. In *Dow/DuPont*, the Commission also defined innovation space which is 'not a market on its own, but an input activity for both the upstream technology markets and the downstream products markets.'<sup>78</sup> With those concepts, the first step to determine market power is moving upstream from existing products/output to the

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<sup>73</sup> "Regulating the Disruptors", available at [www.livemint.com/Technology/Xs-gWUgy9tR4uaoME7xtIT/Regulating-the-disrupters-Jean-Tirole.html](http://www.livemint.com/Technology/Xs-gWUgy9tR4uaoME7xtIT/Regulating-the-disrupters-Jean-Tirole.html)

<sup>74</sup> In some circumstances, the first step of defining market is by-passed. For instance, in an essential facility case, the competition authority focuses on the assessment of the conditions for essential facility, largely downplaying the role of market definition. Thus in *Bronner*, which is one of the main essential facility cases, the Court of Justice left the Austrian Court to define the relevant market but conclude already that the postal delivery network controlled by MediaPrint was not an essential facility, rendering useless the market definition: Case C-7-97 *Bronner v. MediaPrint*, ECLI:EU:C:1998:569.

<sup>75</sup> Commission Notice on the definition of the relevant market for the purposes of Community competition law O.J. [1997] C 372/5, paras 13-23.

<sup>76</sup> Guidance of 3 December 2008 on the Commission's Enforcement Priorities in Applying Article (102 TFEU) to Abusive Exclusionary Conduct by Dominant Undertakings O.J. [2009] C 45/7, paras 12-18.

<sup>77</sup> Commission Guidelines of 14 December 2010 on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements, O.J. [2010] C 11/1, para 119-122 and Communication Guidelines of 21 March 2014 on the application of Article 101 of the Treaty on the Functioning of the European Union to technology transfer agreements O.J. [2014] C 89/3, para 26. The Commission has also developed the concept of *technology market* which consists of "the licensed technology rights and its substitutes, that is to say, other technologies which are regarded by the licensees as interchangeable with or substitutable for the licensed technology rights, by reason of the technologies' characteristics, their royalties and their intended use.": Commission Guidelines on horizontal co-operation agreements, paras 116-118 and Communication Guidelines on technology transfer agreements, para 22.

<sup>78</sup> Commission Decision of 27 March 2017, Case M. 7932 *Dow/DuPont*, para. 348.

capabilities/input necessary to develop and diffuse improved or totally new products.<sup>79</sup> Regarding the determination of market power, the Commission and the Courts have already observed that, in dynamic sectors, the level of the market shares conveys little information on the intensity of market power.<sup>80</sup> In those circumstances, the different types of entry barriers, in particular the barriers to innovation, are more informative.

## (ii) Recommendations

In accordance with the need for more dynamic antitrust analysis, we suggest, on the one hand, to focus more on potential competition and barriers to entry when markets are defined on the basis of products/output markets and, on the other hand, to complement such analysis with the definition of capabilities/input markets.

- *More focus on potential competition when markets are defined on the basis of existing products*

When defining the markets on the basis of existing products,<sup>81</sup> the competition authorities should take into account the characteristics of the digital sector, in particular the possible existence of ecosystems of products. To do that, they may rely on the methodology used for the aftermarkets or system markets.<sup>82</sup> In the Market Definition Notice, the Commission explains that in the case of primary and secondary markets, the analysis of demand substitution should take into account the relationship between the primary and the secondary products. Therefore, the Commission states: ‘A narrow definition of market for secondary products, for instance, spare parts, may result when compatibility with the primary product is important.

*Problems of finding compatible secondary products together with the existence of high prices and a long lifetime of the primary products may render relative price increases of secondary products profitable. A different market definition may result if significant substitution between secondary products is possible or if the characteristics of the primary products make quick and direct consumer responses to relative price increases of the secondary products feasible.*<sup>83</sup> This methodology has been applied in *CEAHR* where the General Court decided that: ‘(...) to be able to treat the primary market and the after markets jointly, possibly as a single unified market or ‘system market’, it must be shown (...) that a sufficient number of consumers would switch to other primary products if there were a moderate price increase for the products or services on the after markets and thus render such an increase unprofitable (...).’<sup>84</sup>

More importantly, when assessing market power, authorities should shift their focus from existing to potential competition. Porter (2002) proposes to apply his famous five competitive forces analysis<sup>85</sup> to the determination of market power in antitrust. He shows that next to the current rivalry captured by market share and concentration ratio, the potential competition by new entrants offering the same product or offering substitute products is also key in understanding the intensity of competition. As put by Porter (2002:15): “by assessing competition beyond existing rivals, the need is reduced for debates on where to draw industry boundaries, or the relevant market in antitrust terms. Any definition of a market is essentially a choice of where to draw the line between established competitors and substitute products, between existing firms and potential entrants, and between existing firms and suppliers and buyers. If these influences on competition are all recognized, and their relative impact assessed, as they are in

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<sup>79</sup> The concepts relate to innovation markets proposed in the seminal paper of Gilbert and Sunshine (1995). They also relate to the resource-based view of the firm (Barney, 1991) and the innovation theories on capabilities (Teece, 2009).

<sup>80</sup> Case T-79/12 *Cisco and Messaget v. Commission*, ECLI:EU:T:2013:635, para 69 deciding that: “recent and fast growing sector which is characterised by short innovation cycles in which large market shares may turn out to be ephemeral. In such a dynamic context, high market shares are not necessarily indicative of market power.”

<sup>81</sup> Another characteristic of the digital sector is the increased personalisation of the offers. According to the Commission, personalisation should lead to market

segmentation when it is possible to clearly identify different groups of customers and when arbitrage among the groups is not possible: Commission Notice on Market Definition, para 43.

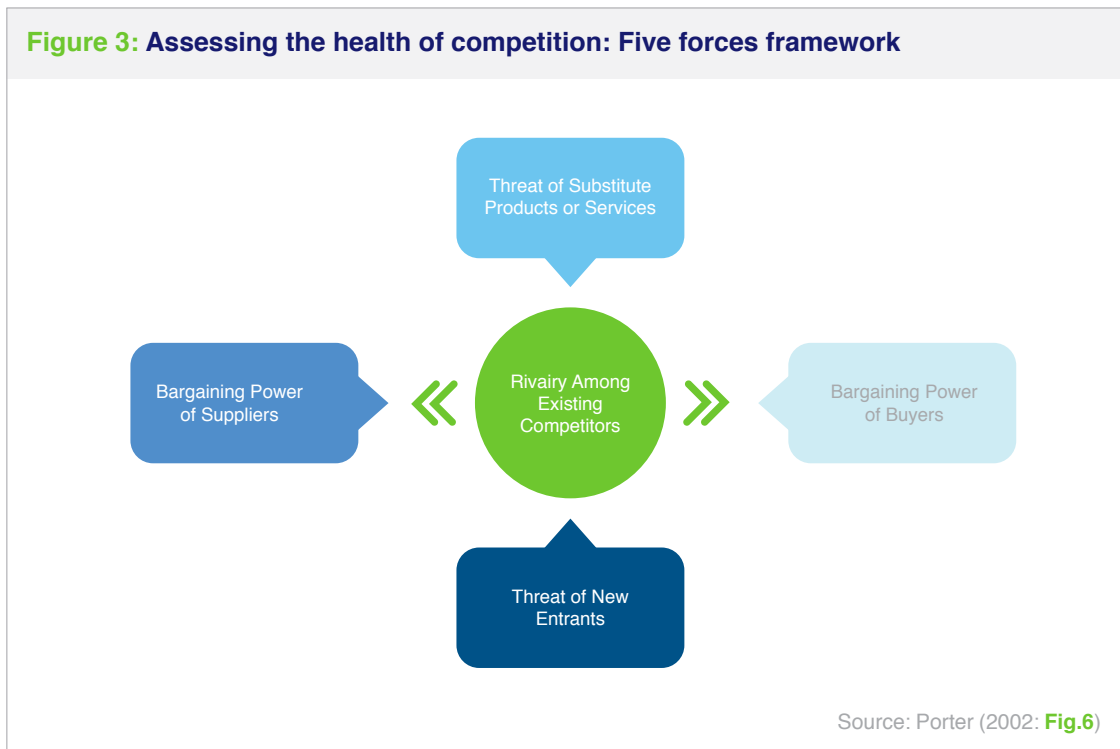
<sup>82</sup> Methodologies to define bundled markets may also be used as explained for instance in the BEREC Report of December 2010 on impact of bundled offers in retail and wholesale market definition, BoR (10) 64.

<sup>83</sup> Commission Market Definition Notice, para 56.

<sup>84</sup> Case T-427/08, *Confédération européenne des associations d’horlogers-réparateurs (CEAHR) v. Commission*, ECLI:EU:T:2010:517, para 105.

<sup>85</sup> Presented in Porter (1980).

five forces analysis, then where the lines are actually drawn becomes more or less irrelevant to strategy formulation and, I suggest, the antitrust analysis of competition.”



- *Defining and analysing innovation markets*

This dynamised standard analysis based on products/output markets should be complemented by a novel analysis based on capabilities/input markets in order to better reflect the importance, the rate and the uncertainty of innovation and the key role played by innovation capabilities. As put by Teece (2009), “when innovation is high, capabilities are more stable than products.” This new approach is challenging because the characteristics of innovation capabilities and their role in product innovation are complex, in particular in

industries where the innovative process is not clearly structured,<sup>86</sup> and varies across sectors.<sup>87</sup> However, as convincingly argued by Kerber and Kern (2014), there are sufficient theories and empirical studies in strategic management, evolutionary economics and innovation economics<sup>88</sup> to build methodologies to define innovation markets with sufficient relevance and legal certainty. As Teece (2009:255) observes: “the tools for assessing capabilities may not be well developed yet, but they are developed enough to allow tentative application. Clearly, product market analysis can be unhelpful and misleading in dynamic

<sup>86</sup> This is the reason why, as already mentioned, the Commission will not base its competitive analysis on R&D poles in industry where innovation efforts are not clearly structured: Commission Guidelines on the applicability of Article 101 TFEU to horizontal co-operation agreements, paras 122.

<sup>87</sup> A differentiated analysis per sector is called by Porter (2002), Kerber and Kern (2014).

<sup>88</sup> But maybe not yet in mainstream industrial organisation which remain the intellectual inspiration of the evolution of competition law. For a good overview of evolutionary economics, see Nelson et al. (2018).

contexts. Using the right concepts imperfectly is better than a precise application of the wrong ones.” This new approach may be more difficult to apply in the digital sector than say in the pharma sector because the innovation process is less structured and shorter in the former than in the later. However, it is not impossible<sup>89</sup> and innovation markets may be defined for the main capabilities of the digital sector such as data, some type of engineering skills, high computing power and very risky capital.

When assessing market power, antitrust authorities should then focus on the barriers to accessing those key capabilities. To do that, authorities may rely on the four conditions set by Barney (1991) for a firm’s resource to be a source of competitive advantage (i.e., inimitable, rare, valuable and non-substitutable).<sup>90</sup> Regarding barriers to data, Lambrecht and Tucker (2015) have applied the four Barney conditions. However, as already mentioned, their conclusions are too general as the conditions should be assessed for specific datasets used for specific types of algorithmic applications. Regarding barriers to risky capital and skilled labour, Petit (2016:67-76) proposes a close antitrust scrutiny of the exclusivity clauses in corporate venture capital funds and of the non-compete clauses in labour contracts for high skilled staff.

In *Microsoft/LinkedIn*, the Commission analysed the role of data as a key input for different product markets but did not define specific markets for data.<sup>91</sup> With regard to online advertising, the Commission concluded that the combination of the datasets of Microsoft and LinkedIn did not raise competitive concerns because entrants in online advertising could rely on the large amount of Internet user data that was valuable for advertising purpose and was not within the exclusive control of the merging parties, and because the merging parties were small

players in online advertising, well behind Google and Facebook.<sup>92</sup> With regard to CRM software solutions, the Commission also noted that LinkedIn datasets could not be considered as an important input to develop Machine Learning based CRM because other sources of data were available and already used by CRM developers.<sup>93</sup>

In summary, we recommend correcting the static bias embodied in products market definition by:<sup>94</sup> (i) shifting the competitive analysis from existing competition to potential competition and barriers to entry, and (ii) complementing this analysis with the definition of capabilities markets.<sup>95</sup> In practice, the Commission should revise the 1997 Notice on Market Definition, which is very static, and integrate the more dynamic market definition (such as competition in innovation) of the Article 101 Guidelines on Horizontal Agreements and Technology Transfer Agreement. In this revised Notice, the Commission should also integrate the provisions on the assessment of market power, currently in the Priorities Guidance on Article 102 to ensure that the definition of the market and the determination of market power are done in an integrated and dynamic manner.

### 3.3. Theories of harm

#### 3.3.1. Bundling and envelopment

##### (i) *Current law and practice*

The Commission defines (i) *tying* as a situation where customers that purchase one good (the tying good) are required to also purchase another good from the producer (the tied good) – it can take place on a *technical* or *contractual* basis –; and (ii) *bundling* as a situation when several products are offered and priced together – in the case of *pure bundling*

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<sup>89</sup> Also Kerber and Kern (2014:48).

<sup>90</sup> Those four conditions are very close to the conditions of the essential facilities, hence the control of an essential facility in antitrust sense is a source of competitive advantage in the strategic management sense.

<sup>91</sup> Decision of the Commission of 6 December 2016, M.8124 *Microsoft/LinkedIn*.

<sup>92</sup> *Ibidem*, paras 167-181.

<sup>93</sup> *Ibidem*, paras 246-277.

<sup>94</sup> Similarly, OECD (2012) and Shelanski (2013) recommend downplaying the

role of market definition in dynamic sectors to alleviate its static bias. More radically, Kaplow (2010) suggests to by-pass the market definition.

<sup>95</sup> The analysis of potential competition for product markets and the definition of innovation capabilities market improve the dynamic of antitrust analysis, but as explained by Kern (2014), both methods do not lead to the same results, hence are not substitutable. The potential competition analysis on product market focus mainly on prices (and to a lesser extend quality) effects while the innovation markets focus on innovation effects.

the products are only sold jointly in fixed proportions while in the case of *mixed bundling*, the products are also available separately, but the sum of the stand-alone prices is higher than the bundled price –.<sup>96</sup> In the following, we will refer to bundling in a general manner, also covering tying. As explained by the Commission in its Guidelines, bundling is often pro-competitive and increases consumer welfare, but in some circumstances, it may be anti-competitive and lead to market foreclosure.

Bundling via internal development done by a dominant firm is prohibited under Article 102 TFEU when anti-competitive. The Commission prioritises action when (i) the tying and the tied products are distinct products and (ii) anti-competitive effects are the most likely, which is the case when the firm can commit to its bundling strategy, for instance through technical means, when many products are bundled or when the prices of the tying product are regulated.<sup>97</sup>

Bundling via mergers and acquisitions is prohibited under the Merger Regulation when anti-competitive. The Commission indicates that it will analyse (i) the ability of the merging firms to foreclose the tied market, which depends on the market power of the merging firms, the consumer overlaps between products, the economies of scale and network externalities, the commitment devices and the defensive strategies of the rivals; (ii) the incentive to foreclose which requires that the benefits of the bundling outweigh its costs; and (iii) the overall likely impact on prices and choice and ultimately consumer welfare.<sup>98</sup>

## **(ii) Recommendations**

As we explained in section 2.1.2., firms in the digital sector have more incentives to offer bundles, or more broadly to create product ecosystems than in other sectors due to specific supply-side and/or demand-side synergies. On the supply-side, important economies of scale and scope in product development due to modular design and sharable

inputs allow firms to create product variants at low incremental costs, which may be unrelated to their basic products, or even complementary, thereby increasing the ability and the incentives to engage in bundling or to create product ecosystems. On the demand-side, consumption synergies that are generated for consumers within a product ecosystem may also increase the incentives of firms to offer bundles or product ecosystems to capture this created value. Since both supply-side synergies and demand-side synergies may be generated and captured in the design of digital products, they may reinforce each other and make bundling and/or the creation of product ecosystems particularly attractive for digital companies.

Moreover, as we explained in section 2.2.1, bundling may have both positive and negative competitive effects and, in the digital sector, both are often amplified. At a very general level, the competitive effects of bundling depend on whether bundling creates efficiencies, which may be the case in particular via supply-side and demand-side synergies, and whether those efficiencies are passed on to consumers. This, in turn, depends on the market characteristics and conditions, in particular the competition between digital firms and the possibility of the consumers to move or multi-home between those firms.

Therefore, the criteria and market characteristics mentioned by the Commission in the Article 102 Priorities Guidance and in the Non-Horizontal Mergers Guidelines to determine whether bundling is anti-competitive should be adapted and extended to the characteristics of the digital economy. In particular, competition authorities should focus on the anti-competitive effects of bundling as entry barriers for innovators, as a means to reduce competition by increasing differentiation, as well as the anti-competitive effects on the envelopment strategies combining economies of scope on the supply-side and network effects on the demand-side.

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<sup>96</sup> Commission Guidelines on the assessment of non-horizontal mergers, paras 96-97; Commission Guidance on the enforcement priorities in applying Article 102 TFEU, para. 48.

<sup>97</sup> Commission Guidance on the enforcement priorities in applying Article 102

TFEU, paras 51-62.

<sup>98</sup> Commission Guidelines on the assessment of non-horizontal mergers, paras 95-118.

### 3.3.2. Access to key inputs and components

#### (i) Current law and practice

The control of key components may impede market entry and contestability when those components are key to enter downstream markets. This is why competition law imposes access to those components under some conditions.

When a firm acquires the control of essential components through internal development, competition law imposes access under very strict conditions to preserve the incentives of the firm to develop those components. A competition authority may impose access when it proves the very strict conditions of the so-called essential facilities doctrine: (i) the access to the input is objectively necessary to compete effectively on a downstream market, (ii) the refusal to give access to the input is likely to lead to the elimination of effective competition on this downstream market and (iii) this will lead to consumer harm such as preventing competitors from bringing innovative products or at least improved products based on follow-on innovation.<sup>99</sup>

When the firm acquires the control of essential components through a merger or acquisition, competition law imposes future access under less strict conditions. In a vertical merger, the antitrust agency may impose structural or behavioural remedies when it proves the conditions of an input foreclosure: (i) the ability to foreclose access to the input, (ii) the incentive to foreclose the access to the input and (iii) the overall likely negative impact on effective competition.<sup>100</sup> To prove the ability to foreclose, the agency should show that the input is important to enter the downstream market but not necessarily that it meets the essential

facility requirements.<sup>101</sup> As already explained, the Commission applied this methodology in *Microsoft/LinkedIn* to determine whether LinkedIn's data were an important input to develop machine learning based CRM software and found that this was not the case.<sup>102</sup>

#### (ii) Recommendations

As we have seen in Section 2.1.2, the control of key components may motivate the formation and expansion of digital conglomerates and may be one of the reasons for their competitive edge when such components are at the basis of modular innovation. As explained in Section 2.2.2, the control of those key components may lead to different competitive concerns, in particular an anti-competitive product proliferation strategy which is less costly than in non-digital sectors and a refusal to share those components, impeding the entry of innovators.

To the extent that it is possible to identify those key components, one potential remedy to allow competition to emerge and ensure market contestability is to require access to such key components. If technically feasible, compulsory access will allow entrants, on the one hand, to enjoy the same economies of scope in product development as the incumbent firm and, on the other hand, to generate demand-side synergies of similar magnitude when integrating the key component in their product ecosystems.

However, as explained by the Commission<sup>103</sup> and the Court of Justice,<sup>104</sup> compulsory access always involves a trade-off between short-term competition, which it aims to stimulate, and innovation incentives of the various market players, in particular the dominant firms subject to the access provision. This trade-off should be assessed against the specific

<sup>99</sup> Commission Guidance on the enforcement priorities in applying Article 102 TFEU, paras 83-88.

<sup>100</sup> Commission Guidelines on the assessment of non-horizontal mergers, paras, 33-57.

<sup>101</sup> Commission Guidelines on the assessment of non-horizontal mergers, para 34 where the Commission explains that: "Input foreclosure may raise competition problems only if it concerns an important input for the downstream product. This is the case, for example, when the input concerned represents a significant cost factor relative to the price of the downstream product. Irrespective of its cost, an input may also be sufficiently important for other reasons. For instance,

*the input may be a critical component without which the downstream product could not be manufactured or effectively sold on the market, or it may represent a significant source of product differentiation for the downstream product. It may also be that the cost of switching to alternative inputs is relatively high."*

<sup>102</sup> Decision of the Commission of 6 December 2016, M.8124 *Microsoft/LinkedIn*, paras 253-277.

<sup>103</sup> Commission Guidance on the enforcement priorities in applying Article 102 TFEU, para 75.

<sup>104</sup> In particular, the Opinion of the Advocate General Jacobs in Case C-7-97 *Bronner v. MediaPrint*, paras 56-70.

characteristics of the digital key inputs whose access is considered. For instance, if the key input analysed is a dataset,<sup>105</sup> the trade-off between short term and long term competition should be assessed against the characteristics of data, in particular the non-rivalry and the general-purpose technology. On the one hand, the costs of compulsory access are smaller for non-rival products than for rival products because the owner of the former can share them without losing their use.<sup>106</sup> On the other hand, the benefits of compulsory access are higher for general-purpose technologies than for other products because of the pervasiveness, the inherent potential for technical improvements and the innovational complementarities of the former (Bresnahan and Trajtenberg, 1995). Therefore, applying the same trade-off between short and long-term competition and innovation, the conditions to impose data sharing under competition law may in many instances be lower for data than for other products. Similarly, Schweitzer et al. (2018) suggest that: *“the threshold for finding that a refusal to supply data constitutes an abuse may be somewhat lower than the threshold for finding an abuse in cases of a refusal to grant access to infrastructures or to intellectual property rights.”*<sup>107</sup>

### 3.3.3. Pre-emptive acquisition in the kill zone: A Downward Innovation Pressure test

#### (i) Current law and practice

Currently at the EU level, the merger notification threshold is based on the monetary turnover of the firms.<sup>108</sup> Therefore, concentration involving firms with small monetary turnover is normally not screened by the European Commission even when the value of the transaction is very important. This is why the acquisition of Instagram by Facebook was not

analysed by the Commission and why, without the specific referral by national competition authorities, the acquisition of WhatsApp by Facebook would not have been analysed by the Commission.

When reviewing a merger, the Commission then assesses its impacts on all the parameters of competition such as prices, output, choice and quality, but also innovation.<sup>109</sup> *Dow/DuPont* is probably the case where the Commission analysed most extensively the effects of the mergers on the incentives of the merging parties to innovate.<sup>110</sup> In this case, the Commission concluded that the merger was likely to lead to a reduction of innovation with discontinuation, delay, or reorientation of the parties' existing overlapping lines of research and pipelines products in herbicide and insecticide and with reduced incentives to start new research. For those reasons, the Commission only allowed the merger after the divestment of a large part of DuPont's herbicide and insecticide businesses and R&D organisation, including pipelines at the discovery stages and R&D facilities.<sup>111</sup>

As explained by Ibanez Colomo (2016), restrictions on innovation may be assessed indirectly or directly by competition authorities. In the first approach, the authorities focus their analysis on market rivalry and foreclosure that, in turn, influence all the parameters of competition including innovation. Hence, the effects on innovation are only indirectly taken into account as a consequence of the change in market rivalry. In the second approach, the authorities focus their analysis directly on innovation, possibly bypassing the assessment, and the proof to the requisite legal standard, of market foreclosure. The author welcomes the first approach as respecting the traditional tenet of EU competition law, but rejects the second

<sup>105</sup> Potential other key components include algorithms, software or search technologies.

<sup>106</sup> The costs of compulsory sharing in reducing data collection incentives are also lower when the data were collected as by-product or incidentally and without specific investment: Prufer and Schottmuller (2017) and Schweitzer et al. (2018).

<sup>107</sup> At para 10 of the English summary report. OECD (2015) goes also in the same direction.

<sup>108</sup> Article 1 of the Council Regulation 139/2004 of 20 January 2004 on the control of concentrations between undertakings, O.J. [2004] L 25/1.

<sup>109</sup> Commission Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings, O.J.

[2004] C 31/5, para 8. At para 38, the Commission indicates that: *“in markets where innovation is an important competitive force (...) effective competition may be significantly impeded by a merger between two important innovators, for instance between two companies with ‘pipeline’ products related to a specific product market. Similarly, a firm with a relatively small market share may nevertheless be an important competitive force if it has promising pipeline products.”*

<sup>110</sup> Commission Decision of 27 March 2017, Case M. 7932 *Dow/DuPont*.

<sup>111</sup> As explained in Bertuzzi et al. (2017).

<sup>112</sup> He has also a third critique to the direct approach as it would lead to regulating the market and choice between different types of innovation.



because,<sup>112</sup> as we understand his views, the theories on the innovation incentives are not sufficiently robust to meet the high convincing standard of proof set by the Court of Justice and to ensure a meaningful constraint on the discretion of antitrust authorities.<sup>113</sup>

However, we disagree with those views. First, the distinction between the indirect and the direct approach is not always clear-cut in practice as the authorities always assess the effects of a conduct on the market rivalry. For instance, in *Dow/DuPont* where the Commission directly determined the effects of the mergers on innovation, it also assessed the effects on market rivalry. Second, the indirect approach assumes that a decrease in market rivalry is always detrimental to innovation.<sup>114</sup> However as numerous theoretical and empirical studies have shown, this assumption does not always hold.<sup>115</sup> Third and more importantly, there are economic theories within industrial organisation literature<sup>116</sup> and outside<sup>117</sup> on which antitrust agencies may base themselves, which allow antitrust authorities to directly assess the effects of a merger on innovation. Those theories are developing rapidly in the industrial organisation field, notably thanks to the *Dow/DuPont* case.

## (ii) Recommendations

A notification threshold based on the turnover is not sufficient to capture some potentially harmful killer acquisitions because those acquisitions often take place early in the life cycle of the target firms when they do not yet have a large monetary turnover. This is especially the case in the digital economy where many start-ups focus more on the growth of their customer base than the growth of their turnover and profit as

they want to be the first to benefit from network effects and that the market might tip in their favour. Therefore, we think that the current merger notification threshold should be complemented by a threshold based on the value of the merger transaction, as is now the case in Germany and Austria.<sup>118</sup> This complement does not imply that all concentrations with a relative high transaction value over the turnover value should be considered as anti-competitive killer acquisitions. It merely means that those transactions should be reviewed by the Commission to determine whether the high transaction price reflects the important future revenues expected from the innovative target (which is welfare enhancing) or reflects the insurance premium for market stability and monopoly rent when the acquired innovation will be killed (which is welfare detrimental). Moreover, this change should not substantially increase the number of concentrations to be notified as the merger transaction value is aligned on the merging firms' monetary turnover in the majority of the cases.

Moreover, given the importance of innovation in the digital sector and the risk that this innovation is thwarted by shoot-out mergers in the kill zone, and given the existing economic theories on merger and innovation within and outside the industrial economics literature, we think that antitrust authorities should directly assess the effects of a concentration on innovation. To do that, authorities should rely, to the extent feasible, on specific but robust tools such as innovation markets (see above) or the downward innovation pressure test (as proposed by Shelanski, 2013:1703-1704).<sup>119</sup>

In practice, the merger review could happen as follows: (i) First, the antitrust agency should focus on

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<sup>112</sup> He has also a third critique to the direct approach as it would lead to regulating the market and choice between different types of innovation.

<sup>113</sup> Petit (2018) also worries about the lack of robust theories for the unilateral effects on competition innovation. However, in another paper, Petit (2016:52-64), complaining about the failure of traditional competition economics to understand and capture the innovation dynamics in the digital sector, calls for applying new theories outside of industrial organisation. As explained by Kerber (2018), those theories have more robust explanations for innovation.

<sup>114</sup> As explicitly recognised by Ibanez Colomo (2016) when noting that: 'Administrative action under competition law still takes as a starting point the rough presumption according to which less concentrated markets are more competitive than more concentrated ones.'

<sup>115</sup> On this, see Kerber and Kern (2014 :5-15).

<sup>116</sup> For instance, Denicolo and Polo (2018); Federico, Langus and Valletti (2018); Motta and Tarantino (2016). Interestingly, this literature has been triggered by antitrust cases, notably the *Dow/DuPont* decision showing the important feedback loop between theory and practice.

<sup>117</sup> In particular in evolutionary economics, innovation studies and strategic management: Kerber and Kern (2014). As Porter (2002:24) observes: "Current merger evaluation is also compromised by its reliance on short-term price and quantity analysis. The result is a sort of false precision, in which tools like merger simulation seem to be exact but assume a stylized model of competition based solely on price and quantity and say little about what will occur in the long run."

<sup>118</sup> The Commission ran on public consultation on this issue in 2016-2017: [www.ec.europa.eu/competition/consultations/2016\\_merger\\_control/index\\_en.html](http://www.ec.europa.eu/competition/consultations/2016_merger_control/index_en.html)

<sup>119</sup> Also Katz and Shelanski (2007).

the risks of cannibalisation effects: is there a plausible scenario where the acquired firm (the entrant), using its innovation, could eat into the market of the acquirer (incumbent)? If the answer is no, then the inquiry need not proceed further; (ii) If the answer is yes, then the agency should ascertain how the post-merger cannibalisation effects influence the incentives of the incumbent: are the gains to be expected from letting the innovation onto the market (taking uncertainty into account) larger than the losses to be incurred? The answer to that question is correlated to the market position of the incumbent, as the more market power the incumbent holds, the larger the anticipated loss will be; (iii) Once it becomes clear that the incumbent would have an incentive to delay or cancel potential innovation, the agency should inquire directly into the business plans of the incumbent even if this is unusual under merger control. The incumbent should be able to give a clear and convincing explanation why it will embrace, and not shelve, the entrant's potentially disruptive innovation. Even better, the agency could request a commitment along those lines.<sup>120</sup> In the absence of a convincing explanation or a commitment, the merger should be prohibited. In addition, as suggested by Schweitzer et al. (2018), the agency should also consider the existence of an overall strategy of systematically acquiring fast-growing potential competitors.

### 3.4. Procedures and Institutions

#### 3.4.1. Markets dynamism and antitrust velocity

##### (i) Current law and practices

With the exception of the merger review for which strict deadlines are imposed, the timing of antitrust decisions is often too slow and not aligned with the timing of market evolutions. This time lag is particularly harmful in the digital sector because, on the one hand, antitrust actions often take more time

than average as new and complex technical and legal issues are raised while, on the other hand, markets are evolving more quickly than average due to rapid technological progress.

One way to reduce this time lag without sacrificing the due process and the quality of the final decision is to rely on interim measures before the adoption of the final decision. However, the legal conditions to impose those interim measures are strict, to alleviate over-use and abuse. They mainly relate to the high costs of delaying intervention (in a decision theory framework, the costs of type II errors are high) and the high probability of finding a competition infringement (in a decision theory framework, the risks of type I errors are low).<sup>121</sup> While the first condition may, in some circumstances, be easily met in the digital sector because markets evolve and tip very quickly, the second condition is often more difficult to fulfil in digital cases which raise new technical and legal issues.

##### (ii) Recommendations

Given the very rapid evolution of digital markets and, often, their quick tipping due to the network effects, it is crucial to reduce the time lag between market evolution and antitrust process. This requires increasing the technical expertise and the information of the antitrust agencies as well as enhancing their experience in dealing with digital markets.

To increase their expertise in digital technologies and market strategies, the antitrust agencies should hire more computer and data scientists, do studies on the digital economy and, when necessary, launch market investigations or sector enquiries and run public consultations.<sup>122</sup> They should also cooperate with other national and international authorities regulating digital markets, such as the agencies in charge of data protection, consumer protection or

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<sup>120</sup> de Stree and Larouche (2015).

<sup>121</sup> Article 8(1) of Council Regulation 1/2003 of 16 December 2002 on the implementation of the rules on competition laid down in Articles [101] and [102] of the Treaty, O.J. [2003] L 1/1 provides that: 'in cases of urgency due to the risk of serious and irreparable damage to competition, the Commission, acting on its own initiative may by decision, on the basis of a prima facie finding of infringe-

ment, order interim measures.'

<sup>122</sup> For instance, European Commission: [www.ec.europa.eu/competition/information/digitisation\\_2018/index\\_en.html](http://www.ec.europa.eu/competition/information/digitisation_2018/index_en.html); US Federal Trade Commission: [www.ftc.gov/policy/hearings-competition-consumer-protection](http://www.ftc.gov/policy/hearings-competition-consumer-protection); the Australian ACCC: [www.accc.gov.au/focus-areas/inquiries/digital-platforms-inquiry/preliminary-report](http://www.accc.gov.au/focus-areas/inquiries/digital-platforms-inquiry/preliminary-report).

digital network security. All this will also reduce the asymmetry of information between the firms and the antitrust agencies, which is often more important in the digital sector than in the rest of the economy because of the complexity and the rapid evolutions of the technologies.

To enhance experience, antitrust agencies should learn by doing, be ready to make mistakes and learn from those. Antitrust agencies, like every public authority, faces the obvious trade-off between, on the one hand, relying on tested-and-trialled theories of harm to preserve legal certainty and increase the probability of winning in Courts and, on the other hand, using novel theories and methodologies to learn how to adapt antitrust tools to changing technologies and markets and increase the effectiveness of antitrust enforcement. As explained by Tirole, the more rapid evolution of the digital markets justifies more trials and errors by agencies.<sup>123</sup> This requires a change in the legal standard of proof which should more equally balance the risks and the costs of errors as explained in the next section. This also requires a more systematic ex-post analysis of the antitrust decisions to determine whether the methodologies used were appropriate and, when remedies were imposed, determine whether they have been effective in order to improve future cases.<sup>124</sup>

The adoption of new deadlines for ex post antitrust cases, next to the existing deadlines for ex ante merger cases, may also help in reducing the time lag between market and antitrust, as the experience in Spain demonstrates. However, some safeguards should be in place to alleviate adverse case selection and to ensure that the agencies will not focus merely on the easy cases that can be decided quickly and ignore the hard cases that can be more useful for the agencies and for the markets. Finally, as suggested by the German Monopolkommission (2015), interim measures could be more frequently used, in particular when the costs of type II errors are particularly

important.

### 3.4.2. Market uncertainty and antitrust legal proof

#### (i) Current law and practice

Currently, there is no presumption of legality or illegality in the Merger Regulation and the standard of proof is the same for the Commission to authorise or prohibit a merger.<sup>125</sup> This standard of proof relates to the most probable post-merger market evolution. According to the Court of Justice: “the Commission is, in principle, required to adopt a position, either in the sense of approving or of prohibiting the concentration, in accordance with its assessment of the economic outcome attributable to the concentration which is most likely to ensue.”<sup>126</sup> Thus, the Commission should authorise the concentration when it is more probable than not that such concentration is pro-competitive and, conversely, prohibit the operation or impose remedies when it is more probable than not that the concentration is anti-competitive.

In the decision theory framework, the equal standard of proof to authorise or prohibit the concentration means that the Commission should consider equally the type I error (prohibiting a merger that is pro-competitive) and type II error (authorising a merger that is anti-competitive). The ‘more likely than not’ standard means that the Commission should focus more on the risks than the costs of those errors. In other words, the Commission should minimise the risks of errors but not the costs of errors nor, as the economists would recommend, the risks multiplied by the costs of antitrust errors. This may not be appropriate in the digital sector where the market evolution is often very uncertain, and hence the probability of errors is inevitably high, and where markets tip quickly, meaning that the costs of type II errors may be very high.<sup>127</sup> This would in particular be the case if, following the Opinion of Advocate General Tizzano in *Tetra Laval*, the Commission should authorise

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<sup>123</sup> Jean Tirole observes that “regulators and economists must be humble; they will learn by doing, and their policies should not be cast in stone”: *Regulating the Disruptors*, available at [www.livemint.com/Technology/XsgWUgy9tR4uaoME7x-tlTI/Regulating-the-disrupters-Jean-Tirole.html](http://www.livemint.com/Technology/XsgWUgy9tR4uaoME7x-tlTI/Regulating-the-disrupters-Jean-Tirole.html)

<sup>124</sup> For a very good ex post analysis of US merger decisions, see Kwoka (2015).

<sup>125</sup> Case C-413/06P *Bertelsmann and Sony/Impala*, ECLI:EU:C:2008:392, para 46 and 48.

<sup>126</sup> Case C-413/06P *Bertelsmann and Sony/Impala*, para 52 ; also Case T-79/12 *Cisco and Messaget v. Commission*, ECLI:EU:T:2013:635, para 47.

the concentration when the market evolution is so uncertain that is not possible to determine a future which is more probable.<sup>128</sup>

In the particular case of conglomerate mergers, the Court of Justice has set the proof requirement at a high level in *Tetra Laval* and in *Impala* by judging that: “the decisions of the Commission as to the compatibility of concentrations with the common market must be supported by a sufficiently cogent and consistent body of evidence (...) and in the context of the analysis of a ‘conglomerate-type’ concentration the quality of the evidence produced by the Commission in order to establish that it is necessary to adopt a decision declaring the concentration incompatible with the common market is particularly important”.<sup>129</sup>

The high requirement is justified by the positive prior that the industrial organisation literature had on conglomerate mergers, as the General Court explained in *Tetra Laval*.<sup>130</sup>

## (ii) Recommendations

Salop (2017) shows that rational decision making under imperfect information should not necessarily attach more weight to the risks than to the costs of antitrust errors as the Court of Justice requires (and as generally lawyers tend to do). When the costs of errors are particularly important, neglecting them can be particularly harmful to consumer welfare. Therefore, we recommend that the Courts should

adapt the standard of proof and move from a ‘more likely than not’ standard to a standard that take the risks and the costs of antitrust error equally into account.<sup>131</sup> In addition, given the amplified dangers that conglomerates may raise in the digital economy, we suggest that the Courts and the Commission replace the current positive prior vis-à-vis conglomerate mergers, which was justified before, by a more neutral prior and do not necessarily apply higher proof requirements for conglomerate mergers than for vertical mergers.

Some go further and suggest changing the burden of proof by establishing a rebuttable presumption of anti-competitive effects in some merger settings, for instance when the acquirer is super dominant.<sup>132</sup> However, the justification and the impact of those proposals need to be investigated further and discussed in the more general context of the use of presumptions in competition enforcement when uncertainty and information asymmetry are important. While uncertainty on the market evolution or competitive effects goes against the extension of presumptions which are often used as a shortcut when effects have been known from the past cases, information asymmetry favours the use of presumptions to reduce the costs of information collection.

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<sup>127</sup> The rapid market evolution does not necessarily make the costs of type II errors low as then-Competition Commissioner Monti explained nearly 20 years ago: ‘I also have doubts that the pace of development in technology sectors will inevitably mean that market failures will last only for a short time. The risk is rather that a position of market power may be temporary in the absence of anti-competitive action – but anti-competitive action by the company with market power would render that temporary strength permanent. This is surely one of the concerns of the Microsoft case in the US, and can also be seen in some of the leveraging cases that I will mention later’: *Competition in the New Economy*, Speech at the 10th International Conference of the Bundeskartellamt, 21 May 2001.

<sup>128</sup> Opinion of the Advocate General Tizzano in Case C-12/03P *TetraLaval v. Commission* para 76 and 77: ‘(...) there is between the cases in which the notified transactions would very probably create or strengthen a dominant position (...) and the cases in which those transactions very probably would not create or strengthen such a dominant position, a ‘grey area’: an area, that is to say, in which cases are to be found where it is especially difficult to foresee the effects of the notified transaction and where it is therefore impossible to arrive at a clear distinct conviction that the likelihood that a dominant position will be created or strengthened is significantly greater or less than the likelihood that such a

position will not be created or strengthened (...) I believe that in such cases the most correct solution is quite certainly to authorise the notified transactions.’

<sup>129</sup> Case C-413/06P *Bertelsmann and Sony/Impala*, ECLI:EU:C:2008:392, para 50. Also Case C-12/03P *TetraLaval v. Commission*, ECLI:EU :C:2005:87, para 44 ; also Case T-79/12 *Cisco and Messaget v. Commission*, para 117.

<sup>130</sup> Case T-5/02 *Tetra Laval v. Commission*, ECLI:EU:T:2002:264, para 155: ‘Since the effects of a conglomerate-type merger are generally considered to be neutral, or even beneficial, for competition on the markets concerned, as is recognised in the present case by the economic writings cited in the analyses annexed to the parties’ written pleadings, the proof of anti-competitive conglomerate effects of such a merger calls for a precise examination, supported by convincing evidence, of the circumstances which allegedly produce those effects’.

<sup>131</sup> We understand that Heike Schweitzer made a suggestion going in the same direction at the Conference on Shaping competition policy in the era of digitisation organised on 17 January 2019 by DG Competition of the European Commission: [www.ec.europa.eu/competition/information/digitisation\\_2018/index\\_en.html](http://www.ec.europa.eu/competition/information/digitisation_2018/index_en.html)

<sup>132</sup> As suggested by Tommaso Valletti at CRA Conference: [www.ecp.crai.com/wp-content/uploads/2018/12/Tommaso-Valletti-2018.pdf](http://www.ecp.crai.com/wp-content/uploads/2018/12/Tommaso-Valletti-2018.pdf)

## 4. CONCLUSION

This paper starts with one observation, the rise of digital conglomerates, and one question, how this rise should affect the enforcement of EU competition policy.

We think that the rise of digital conglomerates is not necessarily abnormal or transitory as sometimes presented in the financial press, but may perfectly be explained by the specific characteristics of the digital economy. On the supply-side, innovation, development and production are often modular and based on inputs (such as data, hardware and software, specific computer skills) which can be shared among several goods or services, thereby increasing the economies of scope in product development. Moreover, some of those shareable inputs cannot easily be traded on the markets because of the uncertainty or the severity of the legal regime to which they are subject (think of non-personal or personal data), thereby increasing the incentives of the firms to internalise those economies of scope. On the demand-side, digital products often exhibit important consumption synergies giving additional incentives to firms to expand their product lines or to create product ecosystems to capture the value of some of those synergies. In addition, the feedback loops between supply-side and demand-side may strengthen even further the conglomerate incentives.

The next question, then, is what are the competitive effects of those conglomerates? Up to now, conglomerate diversification has been seen with a positive prior by antitrust agencies and their only serious concern is market foreclosure with product tying and bundling. However, to paraphrase Jean Tirole, digital conglomerates represent opportunities

but also introduce new dangers while amplifying others. Indeed, digital conglomerates amplify the competitive effects of bundling. On the positive side, conglomerate bundling allows firms and consumers to benefit from economies of scope on the supply-side and on the demand-side. On the negative side, conglomerate bundling can be a tool to raise entry barriers for innovative entrants wanting to focus on a market niche, or to increase differentiation and reduce competition. It can also be a tool for big platforms, relying on their economies of scope on the supply-side and network effects and customer base on the demand-side, to envelop and then eliminate smaller competitors on adjacent markets. In addition, digital conglomerates can also amplify other dangers such as anti-competitive product proliferation, whose costs decrease with the increase of economies of scope or the refusal to give access to key shareable inputs. Those dangers are particularly worrisome when the digital conglomerate has achieved a position of gatekeeper for access to specific customers or content and product. Those dangers should always be balanced with the amplified opportunities brought by digital conglomerates. Finally, the conglomerate diversification through the acquisition of innovative start-ups may be driven by efficiency motives (the large firms bringing skills and resources that are complementary to the innovation developed by the start-ups) or by pre-emptive motives, leading possibly to killer acquisitions, to the detriment of innovation.

This analysis led us to recommend improvements to EU competition policy when applied in the digital economy, regarding objectives and market power assessment, theories of harm and modes of operation. Given the importance of innovation in the digital

economy, we think that dynamic efficiency should be prioritised over static efficiencies and that market power should be assessed much more dynamically by focusing more on potential competition and entry barriers and by moving, when feasible, from products/output to capabilities/input market definitions on the basis of which power could then be determined. Given the new competitive risks raised by digital conglomerates, some theories of harm need to be adapted or complemented: bundling may now be an anti-competitive tool to raise entry barriers against innovators, to increase differentiation and reduce competition or to envelop smaller competitors; compulsory access to key shareable inputs may have less costs; and more benefits and innovative start-up acquisitions should be reviewed as they may reduce innovation incentives. Given the velocity and uncertainty of digital technologies and market evolution, antitrust intervention should be quicker and more agile. Hence, antitrust agencies should enhance their digital expertise and learn more by taking cases, inevitably making mistakes but learning from those.

Also, the standard of proof should not necessarily prioritise the minimisation of the risks of errors over the minimisation of the costs of errors and the positive prior on conglomerate merger should be replaced by a more neutral prior.

The more fundamental question in the background of this paper is how public intervention should be made more effective in an environment that is more concentrated due to the massive network effects and more uncertain due to the rapid technological progress and innovation. To deal with concentration, public agencies need to ensure that markets remain contestable and contested. To deal with uncertainty, agencies need to experiment more and learn by doing.

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