

DATA-DRIVEN MERGERS: A CALL FOR FURTHER INTEGRATION OF DYNAMIC EFFECTS INTO COMPETITION ANALYSIS¹

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Abstract: This article assesses the increasing concentration of data-driven platforms, and argues that a dynamic analysis is better equipped to address challenges stemming from data-driven merges in the digital markets. It first analysis the intersection between big data, entry barriers and innovation. Secondly, it presents the legal and economic implications of considering trends and future market conditions into the merger review. Finally, by revisiting the European Commission approval of the Facebook/WhatsApp merger, this article considers the need for defining a market for data, the possibility of eliminating a potential competitor, the incentives to tip a connected market and to reduce quality in terms of privacy degradation.

Resumo: Este artigo avalia a crescente concentração de plataformas digitais baseadas em *big data*, e argumenta que uma análise dinâmica é melhor equipada para endereçar os desafios originados de tais plataformas nos mercados digitais. Primeiramente, analisa-se a intersecção entre *big data*, barreira de entrada e inovação. Posteriormente, avalia-se as implicações legais e econômicas de se considerar tendências e condições de mercado futuras na análise de atos de concentração. Finalmente, por meio da reanálise da decisão de aprovação da Comissão Europeia referente à aquisição do WhatsApp pelo Facebook, este artigo considera a necessidade de definir um mercado relevante para dados, a possibilidade de se eliminar um concorrente potencial, alavancar poder de mercado para um mercado conexo, e reduzir qualidade em termos de degradação de privacidade.

Keywords: Facebook/WhatsApp, merger control, big data, dynamic analysis, network effect, privacy.

Palavras-chave: Facebook/WhatsApp, atos de concentração, *big data*, análise dinâmica, externalidades de rede.

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1. Introduction

Data-driven mergers are the transactions that aim at acquiring, combining and/or monetizing large amounts of commercially valuable data gathered from multiple sources and formats². In the digital markets (e.g., e-commerce, social networks, search engines, online advertisement, etc.), examples can be found in the mergers between *Verizon/Yahoo!* (2016), *Microsoft/LinkedIn* (2016), *Facebook/WhatsApp* (2014), *Google/DoubleClick* (2008), etc.³.

Those transactions benefit from the developments of artificial intelligence, data mining and machine learning, allowing data to be analyzed for insights that can reduce product and process innovation costs. Indeed, consumers' data is at the core of the business model⁴ and largely explain the market power enjoyed by the world's most valuable public companies, namely Apple, Alphabet, Microsoft, Amazon, and Facebook⁵.

Although data-driven markets bring several challenges such as the interplay between privacy and competition law⁶, transparency and robo-sellers

² Doug Laney crafted the pioneer definition of big data in three dimensions: (i) volume: data comes in large amount and it is collected from a variety of sources such as business transactions, social media, information from sensor, machine-to-machine, etc.; (ii) velocity: data streams in at an unprecedented speed and must be dealt with in near-real time; and (iii) variety: data can be structured and unstructured and comes in all types of formats, e.g., numeric or text documents, e-mail, video, audio, etc.. See Laney (2001). More recently, extra dimensions have been added, including: (iv) variability; (v) veracity; (vi) validity; (vii) vulnerability; (viii) volatility; (ix) visualization; and (x) value. See Firican (2017).

³Verizon/Yahoo!, Case M.8180, EC's Decision on 21.12.2016; Microsoft/LinkedIn, Case M.8124, EC's Decision on 6.12.2016; Facebook/WhatsApp, Case M.7217, EC's Decision on 03.10.2014, and; Google/DoubleClick, Case M.4731, EC's Decision on 22.07.2008. Other big data mergers include Facebook/Instagram for \$1 bn (2012), Alphabet/Waze for \$1.2 bn (2013), among others (The Economist, 2017).

⁴Described as a "raw material for digital business models", personal information has become a factor of competition used to improve products and targeted advertising. See Monopolkommission (2015, p. 36).

⁵ Based on the Financial Times Global 500 ranking of 2017, Apple, Alphabet (Google), Microsoft, Amazon, and Facebook are among the 8 publicly traded companies having the greatest market capitalization.

⁶ This article notes that refraining from accounting for any post-merger privacy harm is a relevant drawback of the current merger control enforcement. For exceptions of this

cartels⁷, this article focus on the economic characteristics of big data and the role of a dynamic analysis to review the increasing concentration of super data-platforms. Specifically, this article proposes a re-analysis of the European Commission (“EC”) merger investigation regarding Facebook/WhatsApp to test what would have changed if a more forward-looking analysis were taken into account.

The remaining of this report is organized as follow: **Section 2** analyzes whether information can yield data-driven platforms an unreplicable competitive advantage. **Section 3** explains how dynamic analysis can contribute to improve data-driven mergers’ review. **Section 4** evaluates what could have changed if a more dynamic analysis were adopted in the Facebook/WhatsApp merger analysis. **Section 5** concludes by summarizing the main takeaways and proposing that dynamic effects, consumer choice, and merger control be analyzed more holistically.

2. Data-driven markets: can a concentrated market still be competitive?

Although Apple, Alphabet/Google, Microsoft, Amazon and Facebook have enjoyed high market shares, reaching billion of users, and significant profits⁸, some for over a decade now (EDPS, 2016), some experts claim that data-driven markets have nearly zero entry barriers because data is ubiquitous, low cost, and widely available⁹. At anytime, coming from a garage somewhere, Schumpeterian “gales of creative destruction” could displace Google or Facebook in the same way that they displaced Yahoo! and MySpace.

trend, see Bundeskartellamt’s investigation on Facebook’s alleged abuse of privacy terms (Press Release, March 2, 2016), and the Italian Competition Authority investigation on WhatsApp’s Term of Use (May 11, 2017).

⁷ On the debate about how price transparency can backfire via anticompetitive price discrimination and logarithm collusion, see OECD (2016), OECD (2017), Schreppel (2017).

⁸ According with Jonathan Taplin, Alphabet/Google has 88% search advertising and is valued at \$530.6 bi, Amazon has 75% in online book sales and is valued at \$362.4 bi, and Facebook/Instagram/WhatsApp 74% market share of mobile social and is valued at \$357 bi. Google and Facebook have each nearly 2 billion customers. See the Conference: Does America have a concentration problem? March 28, 2017, Chicago, US, <https://research.chicagobooth.edu/stigler/events/single-events/march-27-2017>.

⁹ In November 26, 2012, Ron Wyden, U.S. senator, declared in the FTC’s investigation against Google’s search bias case: “compared to almost any other market in the history of antitrust regulation, online search has effectively zero barriers to entry”, <https://www.wyden.senate.gov/download/?id=94C57310-59D3-4D6E-84BE-FF957413BCC3&download=1>.

Thus, most calls for more antitrust intervention against data-driven platforms should be regarded as merely “antitrust populism” (Lamadrid and Villiers, 2017, p. 3).

On the other hand, many consider that data’s nature favors long lasting dominance and are concerned about the entrenchment of data-driven platforms to the detriment of innovation¹⁰, consumer welfare¹¹, and even democracy¹². The so-called Brandeisian movement considers that the fear of antitrust agencies of overreaching fails to serve the public¹³. In face of the “tsunami” of digital mergers, US Senators doubt that the agencies are getting the job done (Dayen, 2016).

To assess whether informational power can become monopoly power, this article focus on three main characteristics of data-driven markets: (i) data as a competitive advantage asset; (ii) higher entry barriers mainly caused by indirect network effects; and (iii) the tendency for market tipping in favor of the data-driven incumbent.

2.1. Data as a competitive advantage

Due to the alleged non-rivalrous¹⁴ nature of data, some authors claim that no incontestable market power could be derived from it (Tucker and Wellford, 2014). Indeed, factual information such as name, age, gender, home address, etc. are commonly provided to multiple entities, but they are not the kind of inputs that search engines, social networks or e-commerce need to provide relevant services to both sides of their platforms (CMA, 2015, paras 2.53-2.54). The volume, scope, and precision of analysis of data gathered nowadays cannot be compared to a brick-and-mortar world.

Successful data-driven platforms have an established user base allowing them to collect, store and process large, real-time data about users last

¹⁰ As observed by The Economist (September 17, 2016) the number of startups in the US is the lower since the 1970s.

¹¹ Authors like Stucke and Grunes (2017 and 2016) have tackled the commonly asserted “myths” regarding the contestability of data-driven markets.

¹² See Dayen (2017).

¹³ As described by Dayen (2017, p. 4-5), the “New Brandeis movement” is formed by a group of scholars that has rebelled against Chicago-school dictates. For the Supreme Court Judge Louis Brandeis: “we can have democracy in this country, or we can have great wealth concentrated in the hands of a few, but we can’t have both.”

¹⁴ A non-rivalrous good means that the cost of providing it to a marginal individual is zero (Cornes and Sandler, 1968). In big data, it means that the same data may be used by different firms at the same time.

minute interests, sentiments, influence, and behavior¹⁵. Specifically, search engines care about search queries history and clicked links. Social networks care about profile information, and constructing the user's social graph. E-commerce cares about users' purchase history. This information is far from being easily collected and it is not readily available on the market (Grunes and Stucke, 2015).

Moreover, the fixed costs involved in setting up the necessary tools for collecting and analyzing data are high. Third party access is also a remote possibility. While platforms like Facebook and LinkedIn prohibit third parties from scrapping content off its platforms, Google restricts portability of advertising campaigns (Graef, 2015), not to mention all the patents involved. This is because data is the input that strength both sides of their platforms: (i) advertisers benefit from better targeted advertising business possibilities; and (ii) users benefit from the higher quality of the functionalities offered.

Big data advantage also allows dominant platforms to closely oversight (or nowcast¹⁶) not only consumers' behavior and markets' trends, but also the development of rivals' business model and nascent threats. No wonder why almost every (realistic) start-up's dream is to be acquired by, rather than become the next big data titan (The Economist, September 2016).

Regardless of being considered, the "new currency of the internet" (Vestager, 2016), the oil of the XXI century (The Economist, May 2017), the important antitrust factor is that big data is commercially valuable – as we can tell by the value of their billionaire acquisitions¹⁷ –, a driver of change, a competitive advantage for incumbents¹⁸, and entry barrier for entrants (Graef, 2015).

¹⁵ Big data has to be processed by logarithms and AI to become valuable. However, the comparative importance of the former compared to the later has been addressed even by Google's chief scientist in 2010, who peremptorily affirmed that "we don't have better algorithms than anyone else. We just have more data". See Asay and O'Reilly (2010).

¹⁶ Nowcasting is defined as the prediction of the present, the very near future and the very recent past in economics, [https://en.wikipedia.org/wiki/Nowcasting_\(economics\)](https://en.wikipedia.org/wiki/Nowcasting_(economics)).

¹⁷ Only Facebook/WhatsApp and Microsoft/LinkedIn transactions amount for more than \$48 billions.

¹⁸ In the EU, the legal test and threshold for treating an input as an essential facility is significantly high, see the ECJ in *IMS Health* (case C- 418/01, para. 34-52) and *Bronner* (case, C-7/97, para.44-45). The US case law is even more averse to applying the doctrine. From an economic point of view, a dynamic framework may be more productive to address data issues than the essential facility doctrine.

2.2. *Entry barriers & data-driven indirect network effects*

With respect to entry barriers, the challenge posed by data-driven markets is that on top of the traditional network effects¹⁹, there are the effects derived from scale²⁰ (i.e., learning-by-doing) and scope²¹ (i.e., multiple data aspects of one user), and what some authors have called spill-over or “data-driven indirect network effect” (Prüfer and Schottmüller, 2017), which have widened the gap between incumbent and entrants’ relevance of service. Indeed, the existence of an indirect network effect that crosses customer groups is what characterizes a business as multi-sided²² (Graef, 2015, p. 476).

Prüfer and Schottmüller (2017) propose an innovative dynamic model of R&D competition to show that, due to indirect network effects, data-driven markets become stably monopolized (“tip”) under very mild conditions²³. The model’s fundamental mechanism is to treat demand side-generated user preferences or characteristics as an input into the supply side-run innovation process. Thus, user information is an input into a firm’s efforts to improve its perceived product quality and therefore reduces firm’s cost of innovation. In the case of search engines, e.g., users’ clicking behavior is the driver for indirect network effects.

As explained by the authors, a key feature of the “datafication” process is the growing importance of the indirect network effect, which combines the machine-generated data about user information, as a by-product of

¹⁹ A network effect is either direct when the consumers’ utility increases as the number of consumers grows, or indirect when the increasing number of consumers of a good leads to more complementary products or services that raises the value of the network (Katz and Shapiro, 1985). In the case of search engine services, the indirect network externality lies on the fact that the search results increase in relevance the more search data become available to the search engine (Argenton & Prüfer, 2012).

²⁰ Economies of scale arise when the incremental costs of creating additional units decline as the scale of production increases (Shapiro and Varian, 1999). In data-driven markets, users and advertisers expect to gain more value and are attracted to platforms with the largest group of customers.

²¹ As suggested by Stucke and Grunes (2017), entry barriers are originated from four network effects: (i) classic network effects; (ii) network effects arising from the scale of data; (iii) network effects from the scope of data; and (iv) how network effects on one side of a platform can spill over to the other side.

²² We agree with Prüfer and Schottmüller (2017) who does not define search engines and social networks as two-sided, but as semi-two-sided, as a higher number of advertisers do not necessarily benefit users.

²³ The authors adopt a model where duopolists repeatedly choose their innovation investments to compute the subgame-perfect Nash equilibria with a finite time horizon.

using goods and services that are connected to the internet, with a reduction in the marginal cost of innovation on the supply side, s.t. the marginal cost of innovating $c(x, D_i)$, is decreasing in demand: $c_{x,D_i} < 0$ ²⁴.

As concluded by the authors, such combination cannot be easily copied by rivals or overcome by a disruptive innovator. Thus, data-driven markets do seem to pose higher barriers to entry resulting from the indirect network effects. Indeed, as observed by Stucke and Grunes (2017), if barriers to entry were low, Google wouldn't have intentionally degraded quality to favor its vertical service, and Microsoft wouldn't have spent over \$4.5 billion to develop the algorithm and capacity to operate Bing – without virtually any success.

2.3. Market tipping & innovation

Prüfer and Schottmüller (2017) show that there is a strong first-mover advantage in data-driven markets, which tip under very mild conditions. In the game proposed by the authors, it means that when quality difference is sufficiently large, firms do not value future too much (δ is sufficiently low), and innovating is not so expensive, eventually, one firm will dominate the market by having full demand in every second period.

An alarming feature of a tipped market is that “there are very little incentives for both the dominant firm and the ousted firm to further invest in innovation” (Prüfer and Schottmüller, 2017, p. 2). This is because, by backward induction, the smaller firm will choose not to invest in innovation since it knows that the dominant firm will be able to match any investment at a lower marginal cost. Knowing this, the dominant's best response is also not to invest. Thus, market tipping cannot only raise barriers to entry, but it can also harm consumers due to the resulting underprovision of innovation.

When a market favors a “winner takes all outcome where monopoly is the nearly inevitable outcome of market success” (OECD, 2014, p. 60), competition authorities should have more reasons to be concerned about mergers that can tip the market, either in the service or product market where the acquirer already enjoys a large share, either in connected markets in which the acquirer can leverage its position, using information gained in his market of origin to tip a second or multiple markets (domino effect) (Prüfer and

²⁴ According with the model, the firms have to incur in the following investment cost to increase its quality by x unit: $c(x, D_i) = \gamma x^2/2 + \alpha x[1 - D_i(\Delta)]$, where γ is a parameter that measures the difficulty to innovate, α is a parameter that measures data-driven indirect network effects, D_i is the demand in $T-1$, and Δ is the quality difference between the 2 firms.

Schottmüller, 2017), as detailed in Section 4 below.

Alternatives to guarantee market contestability in data-driven markets include fostering consumers' data ownership and portability initiatives²⁵. Also, data sharing of anonymized user information could allow competitors to overcome the incumbent's data advantage (The Economist, March²⁶ and May²⁷, 2017), while eliminating the mechanism causing data-driven markets to tip²⁸⁻²⁹.

In sum, data can become an insuperable competitive advantage when: (i) acquirer's dominant position has been stable for a significant period; (ii) data is not easily replicable and the incumbent relies on exclusivity and IP rights; (iii) data-driven indirect network effects are strong; and (iv) the mergers can help the product market or a correlated market to tip.

3. Incorporating a more dynamic approach into merger analysis: what does it mean?

According with Ginsburg and Wright (2012, p. 1-3), dynamic competition models refer to the relationship between present competitive activities and the prediction of future market conditions such as "entry, investment, innovation, price, output, and quality"³⁰. As defined by Sidak and Teece (2009), an analysis that favors dynamic competition over static competition would place less weight on market share and concentration and

²⁵ In the EU, beginning in May 2018, the Regulation 2016/679 will impose an obligation on firms to enable individuals to take their personal data with them when they quit using an online service.

²⁶ In the EU, beginning in January 2018, the Second Payment Service Directive (PSD2) will compel banks to share customer-account information with licensed financial-services providers, under the consent of the account-holder.

²⁷ Ben Thompson, suggested that dominant social networks should be required to allow access to their social graphs, and highlighted that Instagram got off the ground by having new users import the list of their followers from Twitter.

²⁸ If, e.g., Facebook does not have exclusive rights of user information, competitors face the same cost function, and there is no cost advantage in producing quality. See Prüfer and Schottmüller (2017).

²⁹ Effects on total welfare are mixed because if there is no tipping, investments costs are duplicated. However, if data-driven indirect network effects are sufficiently high, data sharing obligations can increase total welfare. See Prüfer and Schottmüller (2017).

³⁰ According with the authors, the term "dynamic analysis" has been used in at least two different ways: (i) to incorporating the creation of new products and business models into the static model of competition; and (ii) the relationship between present competitive activities and future market conditions.

more weight on assessing potential competition³¹ and enterprise-level capabilities³².

Empirical analysis of mergers has been traditionally dominated by static microeconomic theory, holding fixed the set of incumbent firms and products in the market³³⁻³⁴. However, there are important reasons why merger analysis should further incorporate a dynamic approach. In the merger context, the static criterion to assess competition is the immediate price effects in a given market (as well as change in market shares), while a dynamic evaluation also considers the innovation process (Marshall and Parra, 2016), as well as post-merger changes in firms' incentives and behavior.

As observed by Sidak and Teece (2009, p. 41): “[t]he question should be framed not in terms of whether product-market competition will be impaired, as that is too much of an immediate concern, but in terms of whether capabilities will be brought under unitary control, thereby possibly thwarting future variety in new product development”. As recognized by the *Autoritat Catalana de la Competència* (2016), a dynamic perspective of competition it is desirable to assess to what extent the integration would boost the incumbent's data advantage, hinder rivals from access to viable alternatives, or allow for exclusionary practices, limiting innovation in the near future.

This sort of exercise is imperative in data-driven mergers for at least two reasons: (i) data can be considered as a market in itself; and (ii) a dominant position in one data-driven market can be used to gain a dominant position in a second market that is (initially) not data-driven (Prüfer and Schottmüller, 2017).

³¹ Sidak and Teece (2009) argue that competition authorities should take potential competitors and their capabilities more seriously, as new entrants almost always drive innovation in established industries.

³² Id. As capabilities transcend products, they are defined as “upstream resources” and are a better proxy for the firm's competitive position than is its downstream market share” (p. 38). In a dynamic context, a firm will have a kaleidoscope of products, yet the underlying capabilities are likely to be more stable (p. 39).

³³ According to OECD (2007, p. 22), dynamic efficiencies are processes that occur over time or multiple time periods and lead to lower costs, new products, or improved products, e.g., innovation and learning by doing. See Sidak and Teece (2009).

³⁴ Merger analysis incorporates predictive fact-finding in terms of the likelihood of a successful entry, and the effects on prices post merger. To a less extent, competition authorities also apply a forward-looking analysis of future effects of efficiencies and innovation. See Ginsburg and Wright (2012).

3.1. Forward-looking approach to market definition

Except for Twitter, platforms like Amazon, Google, and Facebook do not currently trade data with third parties, which seems to be the reason why the EC has defined the markets for, e.g., targeted ads, search engines and social networks, but not for user data³⁵. However, “by defining a wider market for data, competition authorities and courts will be able to take a form of potential competition into consideration whereby online platforms providers also compete in a market for data” (Graef, 2015, p. 492).

As noticed by Graef (2015), a dynamic approach to market definition would be useful to evaluate the competitive situation beyond the relevant market for the current services offered to users and advertisers, and to assess competitive situations in a potential market for data used for improving the services provided on online platforms³⁶.

This goes in line with the opinion of the US FTC Commissioner Pamela Harbour, who suggested defining “a putative relevant product market comprising data that may be useful to advertisers and publishers who wish to engage in behavioral targeting.” In the Commissioner’s view, this market definition would be more realistic³⁷.

3.2. Connected markets and the domino effect

Defining a *potential market for data needed to provide services for users and advertisers* would also be helpful to understand the incentives of data-driven platforms to leverage market power to an adjacent or “connected” market, and repeatedly in other markets (“domino effect”). As defined by Prüfer and Schottmüller (2017), connected markets are “situation where user information gained in market A is a valuable input to improve one’s perceived product quality in market B”. Moreover, “firm 1 will enter market B when it has become sufficiently dominant in market A”³⁸.

³⁵ For instance, see Facebook/WhatsApp (2014) and Google/DoubleClick (2008).

³⁶ For more details on the possibility of defining a “potential market for data needed to provide services to users and advertisers” see Graef (2015, p. 493).

³⁷ Dissenting Statement of Commissioner Pamela Jones Harbour, Google/DoubleClick, FTC File No. 071-0170, 20 Dec. 2007, p. 9, http://www.ftc.gov/sites/default/files/documents/public_statements/statement-matter-google/doubleclick/071220harbour_0.pdf.

³⁸ “[W]e applied the model and exemplified the domino effect by showing that Google’s strategy to invest in many apparently unrelated markets can be rationalized by our model: these markets are either already connected (by user information driving indirect network effects in each of them) or the firm is trying to identify business models where user information from existing markets can serve as a valuable input into traditional

In the discussed model, entering and dominating a connected market will be possible when firm 1: (i) develops a service or product that makes good use of user information gained in one's original market; and (ii) possess a lot of relevant user information in its home market (Prüfer and Schottmüller, 2017, p. 17). This theory largely explain Google's successful business model of acquiring and entering markets far from its core business (e.g., driverless cars, "smart home" appliances, and healthcare³⁹), but that can all benefit from access to a common pool of user information.

After the antitrust dismantle of conglomerates in the 1980s, intervention in conglomerate markets has been exceptionally rare (OECD, 2007). However, the rational that conglomerate mergers do not change the incentives of the merged firm to change its behavior (Bork, 1978) does not seem to hold in the context of data-driven markets: what may looks like a messy conglomerate on the surface, can have a lot more synergies underneath. Due to data-driven indirect network effects, a conglomerate merger can allow higher concentration in the potential market for user information and the possibility of tipping in correlated markets.

3.3. *Do we need new tools?*

By disregarding dynamic effects a competition authority may forego potential consumer benefits or harm from these effects (OECD 2007, p. 226), especially in markets that are rapidly evolving and in areas where confidence in predictive fact-finding is supported by sound economic theory and empirical evidence (Ginsburg and Wright, 2012). However, as framed by Commissioner Margaret Vestager (2016), "we don't need a whole new competition rulebook for the big data world. (...) what we do need is to pay close attention to these markets and to take action when it's necessary".

Despite the institutional difficulties and personal limitations, competition authorities can overcome the challenges of dynamic analysis by: (i) compelling customer, suppliers, and rivals to identify potential competitors and possible technological developments; (ii) conducting industry-specific studies on innovation; (iii) hiring industry experts to become informed about unfolding innovation; and (iv) conduct consumer surveys to determine what kind of product development consumers would (not) value. Those measures can help authorities to better construct likely hypothetical scenarios about how a

markets." (Prüfer and Schottmüller, 2017, p. 20-31).

³⁹ See "Google transforms into new Alphabet tech conglomerate", Financial Times, by Richard Waters and Eric Platt, August 11, 2005, <https://www.ft.com/content/9a291bf8-3fa2-11e5-b98b-87c7270955cf>.

proposed data-driven merger can change the future market conditions.

4. Could a dynamic analysis have changed the outcome of Facebook/WhatsApp?

As reported by OECD (2016), with WhatsApp owning the leading messaging platform and Facebook offering the most widely used social network, the merger between the two companies has been a focal point in the debate about big data, competition and privacy.

On October 3, 2014, two months after its notification, the EC cleared the merger between Facebook and WhatsApp. At that time, Facebook had 1.3 billion users, while WhatsApp had around 600 million users⁴⁰. The EC assessed the impact of the transaction on three services: (i) consumer communications; (ii) social networking; and (iii) online (non-search) advertising. In sum, the EC concluded that the parties were distant competitors in markets (i) and (ii), and that consumers and advertisers would continue to have a wide choice of alternatives in, respectively, markets (i) and (iii) post-merger.

The transaction was approved even considering the possibility of automated user matching – which was denied at the time of the notification⁴¹ – , as a large amount of internet user data valuable for advertising would continue to exist. However, in August 2016, WhatsApp announced that it would start disclosing the phone number and analytics data of its users to Facebook⁴². In May 18, 2017, EC fined Facebook €110 million for providing misleading information regarding the alleged technical impossibility of matching users of both platforms.

Finally, in the EC's view, any privacy-related concerns flowing from the increased concentration of data within the control of Facebook as a result of the merger do not fall within the scope of the EU competition law rules but

⁴⁰ According to para. 128 and FN 76 f the EC's Decision.

⁴¹ At the time of the acquisition, Facebook said that it was not technically possible to match WhatsApp users' ID with Facebook accounts because most people did not load the phone number used to register on WhatsApp onto their Facebook profile. Subsequently, in August 2016, WhatsApp announced, among other updates on its terms of service and privacy policy, the possibility of linking WhatsApp user phone numbers with Facebook user identities. See, EC Press release on May 18, 2017, http://europa.eu/rapid/press-release_IP-17-1369_en.htm.

⁴² According to WhatsApp, data-sharing will allow Facebook to use a person's phone number to improve other Facebook-operated services, such as making new Facebook friend suggestions, or better-tailored advertising. See Isaac and Scott (August, 2016) and NYT (2016).

within the scope of the EU data protection rules⁴³.

We believe that the adoption of a more dynamic oriented approach could have included the following subjects in this merger analysis: (i) a forward-looking relevant market definition; (ii) the elimination of potential competition; (iii) connected markets and domino effect; and (iv) quality degradation in terms of lower privacy protection.

4.1. A dynamic market for data

Even without defining and analyzing a market for the provision of data, the EC concluded that post-merger, “there will continue to be a large amount of Internet user data that are valuable for advertising purposes and that are not within Facebook’s exclusive control”⁴⁴.

The EC referred to data collection across the web in general, without differentiating between different types of advertising, considering Google, Apple, Amazon, eBay, Microsoft, AOL, Yahoo, Twitter, IAC, LinkedIn, Adobe and Yelp as market participants that collect user data alongside Facebook⁴⁵. As we saw in **Section 2.2.**, the first caveat is that not all those firms collect the kind of data that can compete with the granular, up-to-date user data collected by Facebook.

From a static perspective, were the market to be defined as “non-search advertising on social network”, as initially ventilated by the EC Decision⁴⁶, we would see that the data collected by the platforms mentioned above are not substitutable from the demand or producer side⁴⁷. This is because,

⁴³ See para. 164, p. 29, EC Decision.

⁴⁴ See para. 189, EC Decision.

⁴⁵ See para. 188-189, EC Decision.

⁴⁶ See para. 76 an 77, EC Decision: (76) (...) search and non-search ads are not substitutable as they serve different purposes (for search ads, mainly generating direct user traffic to the merchant's website, while, for non-search ads, mainly building brand awareness) and, as a result, most advertisers would not be likely to switch from one type to another in the event of a 5-10% price increase. (77) (...) A number of respondents considered that other forms of non-search advertising are not as effective as advertising on social networking websites and notably on Facebook, due to Facebook's large and highly engaged audience and its ad targeting opportunities.

⁴⁷ Twitter data seems like the only good substitute for Facebook data - although the inverse does not seem to hold. See the arguments made by John David Rich in *PeopleBrowsr v. Twitter* (2012) affirming that tweets are “contemporaneous reports on users’ experience that provide unique feedback regarding consumers’ reactions to product and brands” and that the possibility of respond and retweet “provides unique

as seen in **Section 2.2.**, Facebook collects data on social graph, interactions, and profile information, while Apple, Amazon and eBay collect data mainly on purchase behavior, and Google, Yahoo/Bing on search queries and clicked links. Data collected by search engines can be used to provide online search advertising but is hardly used to provide social networking advertising.

From a dynamic perspective, if the EC had gone beyond the current services being offered by the merging parties, and realized that users' data, as an upstream resource, is a better thermometer of competitiveness than downstream market shares, a relevant market for data could have been defined.

Firstly, following the approach suggested in **Section 4.1.**, if we identify the market as "data needed to provide non-search advertising and relevant services in social network", Facebook/WhatsApp merger would render Facebook dominance even more indisputable for both sides of the platform. Unlike the EC, we do not see how "Google+, LinkedIn, MySpace, Pinterest and InterNations"⁴⁸ could impose a competitive constraint to Facebook's near 2 billion users platform, as none of them have similar scale or network effects and, in the case of LinkedIn, it is a professional, and not a social network as Facebook. In this scenario, the merger analysis would likely conclude that Facebook is dominant in the market for advertising on social networks and, thus, integrating with WhatsApp's data could have enhanced Facebook's market power.

Secondly, we note that even if the market was more widely defined as "data needed to provide non-search advertising", the merger would reinforce a duopoly and lead to weaker contestability as only Google could pose a competitive constraint in this market⁴⁹.

4.2. Elimination of potential competition

As pointed out by many critics⁵⁰, the reason why Facebook was paying nearly \$22 billion to buy a firm with modest revenues⁵¹ and less than 60 employees, lies in the fact that WhatsApp, by scanning millions address books,

insight about which members of communities are influential).

⁴⁸ See para. 62, EC Decision.

⁴⁹ We also disagree with the EC Decision that "Yahoo!, MSN and local providers" would represent a "sufficient number of alternative" to compete against Facebook ad targeting opportunities and high return on investments. See para. 177, EC Decision.

⁵⁰ The Economist (May, 2017), EDPS Opinion 8/2016, among others.

⁵¹ After transactions like Facebook/WhatsApp, authorities have incorporated an additional threshold based on the value of the transaction to the current turnover threshold. See OECD (2016, p. 20) and Monopolkommission (2015).

had built an alternative “social graph”, the network of connections between friends, which is indeed Facebook’s most valuable asset. WhatsApp functionalities were becoming closer to offer a broader digital social experience, as provided by Facebook⁵². Therefore, Facebook was eliminating a nascent threat⁵³ in the social network services, and the merger would rend Facebook’s dominant position in social network even less contestable in the future.

Also, in the market for online advertising services, the merger was excluding the possibility of WhatsApp to serve non-search ads on its platform as an independent competitor. As observed in the dissenting statement in the FTC approval of Google/DoubleClick, also in Facebook/WhatsApp merger with respect to non-search targeted ads, the indirect network effects may not have been taken into account and the barriers to entry raised by the merger would mean that the advertisers would not have any alternative but to resort to the merged entity⁵⁴.

4.3. Tipping a connected market

As the EC frames the Facebook/WhatsApp merger, there was no concentration problem in the market for target advertising as automated matching Facebook users’ ID with WhatsApp users’ ID was not technically possible, and even if merging data was possible, WhatsApp “limited” user information could not add much value to Facebook’s data hoard⁵⁵.

First, we understand that WhatsApp data (i.e., user name, picture, status message, phone number, agenda, etc.) could be used to improve Facebook relevance of service and future advertising purposes in the future. As data collected via mobile data analytics is more personal, geo-located, and can be cross-referenced with call behavior, it could help Facebook to improve some of its functionalities, like suggesting friends, as it is actually doing⁵⁶. Merging data could also be relevant for launching new AI services in the future.

⁵² As argued by many third parties, allowing for video calls, content exchange, creation of big groups, desktop access, etc., it seems that WhatsApp was already a provider of social networking services and should have been considered as a competitors of Facebook. See para 144, EC Decision.

⁵³ The Economist (May, 2017), p. 9;

⁵⁴ Dissenting Statement of Commissioner Pamela Jones Harbour in Google/DoubleClick.

⁵⁵ See paras 71, 180-188, EC Decision.

⁵⁶ See http://www.nytimes.com/2016/08/26/technology/relaxing-privacy-vow-whatsapp-to-share-some-data-with-facebook.html?_r=1.

Secondly, from Facebook's perspective, more crucial than to improve its data was to start serving ads in other markets. As pointed out by Fiegerman (2017), before the transaction, Facebook was hitting its maximum capacity for how many ads it could serve in its social network platform (included Instagram). Likely, the merger would expand Facebook's presence in the mobile target advertising, and allow it to serve ads not only in its own communication app (i.e., Messenger⁵⁷), but also in WhatsApp's⁵⁸.

Thus, as suggested by the theory (Prüfer and Schottmüller, 2017, p. 16-17) provided in **Section 4.2.**, Facebook was looking for a connected market to develop a service or product (i.e., chatbots) that makes good use of user information gained in Facebook's original market. Thus, evidence and economic theory indicates that Facebook's main reason to acquire WhatsApp seems to leverage its granular user data already collected on Facebook in order to start serving targeted ads in WhatsApp, a connected market (initially) not data-driven. As we saw from the theory, due to indirect network effects and the decreasing marginal cost of innovating, Facebook can cause the consumer communication app market to tip in favor of WhatsApp.

Thus, post-merger, services like Telegram would no longer be a relevant competitive constraint to WhatsApp⁵⁹, which will be able to use its collective data with Facebook to innovate much cheaper and capture full demand in the consumer communication apps market (**Section 2.4.**).

4.4. Privacy and quality degradation

Although privacy is not the focus of this research, a more dynamic approach would have urged the EC to analyze whether consumers would be harmed by any privacy degradation, even if there was no breach of privacy

⁵⁷ Spring, Facebook's mobile shopping start-up, is an interface that allow users to begin a personal conversation with a "chatbot" that will show them a smattering of thing they may like. See Isaac (April, 2016).

⁵⁸ WhatsApp blog announced on August 25, 2016, that, although users phone number and encrypted messages stay private, it was changing its terms and privacy policy to allow it to "coordinate more with Facebook", and test new ways for its users to "communicate with businesses" in the months ahead. See <https://blog.whatsapp.com/10000627/Looking-ahead-for-WhatsApp>.

⁵⁹ We also disagree with the EC's point of view that LINE, WeChat, iMessage, Snapchat could represent a significative competitive constraint to WhatsApp 1 billion users platform, as they have much less users and user engagement, and Skype, Viber and Hangout are not mainly used for content and messages exchange, but for video calls.

laws. In particular, the EC could have analyze to what extent users would be able to detect quality degradation and switch to alternative apps offering higher privacy protection. Due to information asymmetry, the competition authority would be better equipped to evaluate the tradeoffs stemming from privacy loss than the consumers alone, considering that they cannot fully assess the value of their data, and are the victims of intrusive advertising and behavioral discrimination⁶⁰.

5. Conclusion

In data-driven markets, players do not merely compete on prices, but in service perceived quality, and by introducing new features and products. While big data may boost innovation and connectivity, it can also entrench market power and compromise privacy. This tradeoff could be better addressed by further integration of dynamics effects into competition analysis.

In particular, regarding the analysis of data-driven mergers, competition authorities could take into account that: (i) data can yield an unreplicable advantage and entrench market power, as information about users' last minute behavior is not easily or readily available; (ii) dominant platforms nowcast not only consumer's behavior, but also the development of rivals' business models, precluding nascent threats from a chance to displace incumbents; (iii) data-driven indirect network effects can cause the product market or a correlated market to tip much more easily, hindering entry.

As suggested with the re-evaluation of Facebook/WhatsApp, a more dynamic analysis, however challenging and imperfectly, is better equipped to account for data-driven mergers' effects on consumer welfare in the long-run (Sidak and Teece, 2009; and Buttarelli, 2016). Thus, future market conditions could have prompted the EC to define a market for data needed to provide services for users and advertisers, and carefully consider how WhatsApp acquisition could be a strategy to eliminate potential competition, a way of tipping a connected market, or even a form of quality degradation in terms of privacy reduction.

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⁶⁰ The possibility of an infringement to competition laws by privacy degradation was recognized as technically viable by EC case handlers. See Ocello et al (2015). However, the authors concluded that in Facebook/Whatsapp, privacy was not a key parameter of competition in the view of consumers and/or consumer communication apps.

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