

# Back to the future: in search for a new paradigm for the identification of market power in the Big Data Sector

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## Introduction

Big data is commonly understood as data “characterised by a large volume, velocity, variety and value.”<sup>2</sup> A peculiar characteristic of the big data market relates to the linkage between the data value and the ability to process it<sup>3</sup>; indeed, a raw large set of data might be, *per se*, quite worthless unless the entity possessing it is in the position to process it.<sup>4</sup>

Data processing is a sophisticated procedure, and data is often harvested in multi-sided markets where network effects enable undertakings to collect data from one side of the market and subsidise services in another side.<sup>5</sup>

Far from being straightforward, the application of competition law to the Big Data sector poses serious intricacies and new challenges. The main difficulties lie with the multi-sided aspects of big data online platforms, alongside the fact that data is a *sui generis* product; it is not finite as other products, and it is difficult to replicate on a large scale.<sup>6</sup>

From an anti-trust perspective, the current main concern in relation to the big data sector appears to be related to the identification of market power. The peculiar traits of data as a

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<sup>2</sup> Definition given by OECD Directorate for Financial and Enterprise Affairs Competition Committee, Big Data: Bringing Competition Policy to the Digital Era, available at: [https://one.oecd.org/document/DAF/COMP/M\(2016\)2/ANN4/FINAL/en/pdf](https://one.oecd.org/document/DAF/COMP/M(2016)2/ANN4/FINAL/en/pdf)

<sup>3</sup> Some firms can process data in real time with a high degree of predictive ability (with the term ‘forecast’ being replaced with ‘now-cast’). See Talhaoui, Mohamed Amine, “Real-time Data Stream Processing - Challenges and Perspectives”, International Journal of Computer Science, Volume 14, Issue 5, September 2017, at p.7.

<sup>4</sup> See “Competition policy: The challenge of digital markets Special Report No 68”, Special Report by the Monopolies Commission pursuant to section 44(1)(4) of the Act Against Restraints on Competition 2015, para 183, [https://www.monopolkommission.de/images/PDF/SG/s68\\_fulltext\\_eng.pdf](https://www.monopolkommission.de/images/PDF/SG/s68_fulltext_eng.pdf).

<sup>5</sup> Filistrucchi, L., Geradin, D., Van Damme, E., & Affeldt, P., Market definition in two-sided markets: theory and practice, *Journal of Competition Law and Economics*, 10(2), 2014, pp. 293-339; Filistrucchi, Lapo, D. Geradin, and E. van Damme, “Identifying Two-Sided Markets”, TILEC Discussion Paper. No. 2012-008, Tilburg, 2012; Inge Graef ‘Market Definition in Data: The Case of Online Platforms’ (2015) 38(4) *World Competition* 473–506.

<sup>6</sup> See J. Modrall, “Big Data and Merger Control in the EU”, *Journal of European Competition Law & Practice*, Volume 9, Issue 9, November 2018, p.579.

product and complex structure of the market render traditional pricing and market shares-based matrix for the identification of market power unsuitable for the big data industry<sup>7</sup>.

A flawed assessment of market power could lead to big data undertakings with individual or joint ownership of large sets of data being capable of harming competition in the market where the undertakings in question are operating, or in the downstream market.<sup>8</sup>

The aim of this article is to re-consider the current *status quo* in relation to the interface between market power and the application of competition law to the Big Data market, with the view to suggesting possible alternative approaches.

In order to do so, we shall first assess the nature of the big data sector and its antitrust implications, with emphasis on the possible competition concerns arising from the individual or joint accumulation of large sets of data by undertakings operating within this market; emphasis will be placed on the assessment of market power in big data mergers and on abuses of dominant position in EU data driven markets, as well as on the Database Directive and the UK scenario.

The article will thereafter attempt to re-consider neoclassic competition theories such as market contestability and the notion of essential facility and their application to the big data industry. The aim is to understand the real nature of big data markets, to consider the current antitrust assessment methodology of market power and assess its suitability for the application of competition law to the Big Data industry.

Finally, an attempt to theorise a new paradigm for the antitrust evaluation of market power in the Big Data sector will be made, alongside with the development of new standards and new theories of harm as an alternative approach to the current regulatory regime.

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<sup>7</sup> See Greg Sivinski, Alex Okuliar and Lars Kjolbye, *'Is big data a big deal? A competition law approach to big data'* (2017) 13 European Competition Journal 2-3; Nathan Newman, *'The Costs of Lost Privacy: Consumer Harm and Rising Economic Inequality in the Age of Google'* (2014) 40 William Mitchell Law Review 849, 54; Maurice E. Stucke and Allen P. Grunes, *'No Mistake About It: The Important Role of Antitrust in the Era of Big Data'* (2015) The Antitrust Source April, University of Tennessee Legal Studies Research Paper No.269 Available at SSRN: <https://ssrn.com/abstract=2600051> accessed 29 April 2019.

<sup>8</sup> Downstream markets are markets that are connected to the market in question, but are situated at lower levels or after it in the supply chain. See Hoppner, T., *"Duty to Treat Downstream Rivals Equally: (Merely) a Natural Remedy to Google's Monopoly Leveraging Abuse"*, 1 European Competition and Regulatory Law Review (CoRe) Issue 3/2017, pp. 208-221.

## Big Data, market power and competition concerns

The intricacies arising from the application of competition law to big data are, as will be readily appreciated, many. Data is, in its essence, a very different product compared to traditional goods; it is of finite nature and can (at times) be easily replicated, and in order to acquire market value it requires specific processing capacities.

Due to the possibility for multiple undertakings to gather and use the same data sets, the literature tends to consider data to be of “non-rivalrous” and “ubiquitous” nature.<sup>9</sup> Nevertheless, it is opinion of this author that the aforementioned qualifications may be deceptive. For instance, companies developing and testing new products tend to store large amounts of data; if shared among competitors, the distinctive and unique nature of such data would undoubtedly give rise to antitrust concerns.

Part of the doctrine also considers data’s decreasing marginal returns and low incremental value as viable counter-factual elements vis-à-vis potential anti-competitive effects.<sup>10</sup> As with the aforementioned idea of data being of non-rivalrous/ubiquitous nature, such observations do not appear to be entirely accurate; one needs to consider that the incremental value and usefulness of data cannot be abstractly conceptualised, and that both traits are very much dependent on the nature of data and the type of applications for which they are employed.

For instance, data collected through research and development of commodities over a long period of time is likely to generate diminishing marginal returns, with the consequential implication being that a company cannot necessarily hinder competition *per se* simply because it possesses more data. Conversely, data related to customers’ interests and activities may not display diminishing marginal value but could possess short term value.<sup>11</sup>

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<sup>9</sup> See I.Graef, “*EU Competition Law, Data Protection and Online Platforms: Data as Essential Facility*”, 2016, Kluwer Law International, p. 75. See also D.Sokol & R. Comerford, “*Does Antitrust Have A Role to Play in Regulating Big Data?*”, p. 7 <https://som.yale.edu/sites/default/files/SSRN-id2723693.pdf>; Edlin, Aaron S. and Robert G. Harris, “*The Role of Switching Costs in Antitrust Analysis: A Comparison of Microsoft and Google*”, Yale Journal of Law and Technology 15, 2013, pp. 169- 213; Orbach, Barak and Raphael Avraham, “*Squeezing Claims: Refusals to Deal, Essentials Facilities, and Price Squeezes*”, Oxford Handbook on International Antitrust Economics Volume 2 Roger Blair and Daniel Sokol (eds.), 2014, pp. 120-131.

<sup>10</sup> See Schepp, Nils-Peter and Achim Wambach, “*On Big Data and Its Relevance for Market Power Assessment*”, Journal of European Competition Law & Practice, 2015, p139.. See also D.Sokol & R. Comerford, “*Does Antitrust Have A Role to Play in Regulating Big Data?*”, p. 7 <https://som.yale.edu/sites/default/files/SSRN-id2723693.pdf>;

<sup>11</sup> Data are often stored directly by undertakings on their own consumers, products and services, and employed for a variety of commercial objectives, and it is under such circumstances referred to as “first-party data”. Nevertheless, data can also be acquired as a product, and could be defined as “third-party data,” as opposed to be collected or inferred directly.

To complicate matters further, the big data industry can also be conceptualised as a ‘multisided market.’ Although the definition of ‘multisided markets’ lacks specific consensus in the literature<sup>12</sup>, multisided markets are characterised by different groups of users interfacing directly or indirectly via a platform<sup>13</sup> (e.g. transactions platforms like Amazon or technological frameworks such as Microsoft)<sup>14</sup>, with the platform acting as a catalyst for a chain of interactions between different users.

Such interactions create so-called ‘network effects’ and ‘cross-platform externalities’, i.e. inter-connections between the actions of the users of one side of the platform, or of the platform itself, and their effects vis-à-vis the participants on other sides of the platform (or the functioning of the platform itself).<sup>15</sup>

Online undertakings require an extensive platform of users from whom to collect data, and equally large sets of user data in order to maximise the return of their services. This strong cross-platform network externality creates the so called ‘feedback loops’<sup>16</sup> which, in turn, lead

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<sup>12</sup> See J. Ondrus et al., “The Impact of Openness on the Market Potential of Multisided Platforms: A Case Study of Mobile Payment Platforms”, 30 *J. INFO. TECH.* 260, 261 (2015); D. Evans, Background Note”, in *POLICY ROUNDTABLES: TWO-SIDED MARKETS* 23, 29 (Organisation for Economic Co-operation and Development Competition Committee, 2009); D. S. Evans & R. Schmalensee, “The Industrial Organization of Markets with Two-Sided Platforms”, 3 *COMPETITION POL’Y INT’L* 151, 152 (2007); R. B. Hesse & J. H. Soven, “Defining Relevant Product Markets in Electronic Payment Network Antitrust Cases”, 73 *ANTITRUST L.J.* 709, 714 (2006). In contrast, Andrei Hagiu and Julian Wright believe that “network effects are neither necessary nor sufficient” in defining multisided platforms. Andrei Hagiu & Julian Wright, *Multi-sided Platforms*, 43 *INT’L J. INDUS. ORG.* 162, 164 (2015).

<sup>13</sup> See Evans, David S. and Schmalensee, Richard 2014. *The Antitrust Analysis of Multi-Sided Platform Businesses* Oxford Handbook on International Antitrust Economics Volume 1 Roger Blair and Daniel Sokol (eds.), 404-450.

<sup>14</sup> The most common types of platforms are “transaction platforms”, also known as “digital matchmakers”, e.g., Amazon or Uber. A different type of platform is the so-called “innovation platform”, which generates a technological structure upon which independent designers can develop new systems (see Martin Kenney, John Zysman “The Rise of the Platform Economy”, *Issues in Science and Technology*, Volume XXXII No.3, 2016, p.21).

<sup>15</sup> Network effects may be either direct or indirect. “Direct network effects arise where users of the product interact with each other, so having more users makes the product more useful and valuable.” Secretariat, Executive Summary, in *THE DIGITAL ECONOMY* 5, 8 (Organisation for Economic Co-operation and Development Competition Committee 2012). For example, eBay—through which individuals can buy and sell goods on line—becomes more valuable to buyers as the number of sellers increases because there are more items available for sale. At the same time, eBay becomes more valuable to sellers as the number of buyers increases because there are more potential customers available.

<sup>16</sup> See Evans, David S. and Schmalensee, Richard 2014. *The Antitrust Analysis of Multi-Sided Platform Businesses* Oxford Handbook on International Antitrust Economics Volume 1 Roger Blair and Daniel Sokol (eds.), 404-450.

to economies of scale; within these loops, a spiral of actions and reactions effects can considerably enhance the scale of the consequences of the action.<sup>17</sup>

For instance, price increments in online subscriptions may reduce the number of users, and this can have the effect of also reducing the amount that advertisers willing to operate on the platform. By the same token, this may reduce profits that providers earn by showcasing content on the platform, which may result in decreased quality content and reduce the number of users; this may, in turn then reduce the amount that advertisers are willing to pay.<sup>18</sup>

Each action in the online platform can therefore generate a series of reactions (ripple effects); the overstretching of these effects may lead to dominance, monopolistic scenarios and insurmountable barriers to entry<sup>19</sup>.

Network effects in the big data sector can also produce direct and indirect externalities: direct externalities arise when the value of a specific product/service for a specific category of end users is directly linked to the number of customers using that said product/service.

Conversely, indirect externalities occur whenever the synergy linkage between the value of the product/service used by a specific group of end users is linked to the use of the product/service by a different cluster of end users.<sup>20</sup>

Indirect externalities can assume complex forms and are not necessarily symmetric. For instance, if the appeal of an online social network platform for advertisers undoubtedly would upsurge in parallel with an increase in the number of users. Nevertheless, it has been correctly pointed out that this does not necessarily entail that the platform end users would value an increase in the number of advertisers or advertisements.<sup>21</sup>

Economic literature suggests that network effects can have adverse effects vis-à-vis competition, as they might lead to a position of dominance and to market concentration.<sup>22</sup> If

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<sup>17</sup> See DIRECTORATE FOR FINANCIAL AND ENTERPRISE AFFAIRS COMPETITION, COMMITTEE, *“Rethinking the Use of Traditional Antitrust Enforcement Tools in Multi-sided Markets”*, DAF/COMP/WD(2017)55, available at: [https://one.oecd.org/document/DAF/COMP/WD\(2017\)55/en/pdf](https://one.oecd.org/document/DAF/COMP/WD(2017)55/en/pdf).

<sup>18</sup> David S. Evans & Richard Schmalensee, *The Industrial Organization of Markets with Two-Sided Platforms*, 3 COMPETITION POL’Y INT’L 151, 152 (2007).

<sup>19</sup> See DIRECTORATE FOR FINANCIAL AND ENTERPRISE AFFAIRS COMPETITION, COMMITTEE, *“Rethinking the Use of Traditional Antitrust Enforcement Tools in Multi-sided Markets”*, DAF/COMP/WD(2017)55, available at: [https://one.oecd.org/document/DAF/COMP/WD\(2017\)55/en/pdf](https://one.oecd.org/document/DAF/COMP/WD(2017)55/en/pdf).

<sup>20</sup> Direct and indirect network effects may also coexist in some cases. For instance, the value of a social network for a given user is likely to increase with the total number of users of that network (direct network effects). Meanwhile, a higher number of users of a social network also increases the value for advertisers (indirect network effects).

<sup>21</sup> Competition Law and data p. 27.

<sup>22</sup> See Evans, David S. and Schmalensee, Richard 2014. *“The Antitrust Analysis of Multi-Sided Platform Businesses”*, Oxford Handbook on International Antitrust Economics Volume 1 Roger Blair and Daniel Sokol (eds.), 404-450. David S. Evans & Richard Schmalensee, *“The Industrial Organization of Markets with Two-Sided Platforms”*, 3 COMPETITION POL’Y INT’L 151, 152 (2007). See DIRECTORATE FOR FINANCIAL AND ENTERPRISE AFFAIRS COMPETITION, COMMITTEE, *“Rethinking the Use of Traditional Antitrust*

we consider online platforms markets, the gathering and utilisation of data could considerably strengthen network effects; an online undertaking experiencing an increase in number of users would be in the position to collect more data and to acquire a competitive advantage against direct competitors.<sup>23</sup>

The assessment of market power in multi-sided platforms such as the big data market is therefore an extremely complex form of exercise. Such complexity is further exacerbated by the contestability of big data markets and the presence of barriers to entry into the sector.

The theory of contestable markets postulates that in case of low barriers to entry concentration does not necessarily serve as an exhaustive indicator of high market power<sup>24</sup>, as the possibility of entry into the market by new players would serve as a counter-acting balancing factor vis-à-vis the postulation of high market power concentration.

Conversely, market concentration in case of high barriers to entry would give rise to delicate competition issues especially in presence of an ‘essential facility’. Under such scenario, the so-called ‘essential facilities doctrine’ would compel firms controlling an indispensable facility to share it in case it is impossible or extremely difficult for an actual or potential competitor to compete with the incumbent firm without access to its facility.<sup>25</sup>

In light of the aforementioned considerations, one may wonder if the application of classic antitrust theories leads to realistic evaluations of market power in the big data industry, and if a new approach be advocated instead, taking into account the two-sided nature of the big data market, and its level of contestability.

An attempt to formulate an answer to the aforementioned questions will be made in the following, with the first step consisting in a critical evaluation of the current *status quo*.

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*Enforcement Tools in Multi-sided Markets*”, DAF/COMP/WD(2017)55, available at: [https://one.oecd.org/document/DAF/COMP/WD\(2017\)55/en/pdf](https://one.oecd.org/document/DAF/COMP/WD(2017)55/en/pdf).

<sup>23</sup> The intricacies of such scenario are further exacerbated by the fact that the mere collection of data is insufficient, per se, to determine a position of strength: indeed, the collection of large data which is of replicable nature, as well as not being competitively significant, would not give rise to exclusionary concerns of the types highlighted by antitrust authorities.

<sup>24</sup> See J.Alberro and R. Schwabe, “*The theory of contestable markets and its legacy in antitrust practice*”, *Antitrust Law Review*, Vol.6 [1], 2016, p.20.

<sup>25</sup> See the OECD definition of ‘essential facility’ in “*The Essential Facilities Concept*”, OCDE/GD(96)113.

## **The identification of market power in the Big Data sector: the current *status quo***

In economic terms, market power is the capacity of a firm to gainfully raise the market price of goods or services above marginal cost.<sup>26</sup> In perfectly competitive markets, market participants would not have any market power at all, with any profit-maximizing producer effectively facing a market price equal to its marginal cost.<sup>27</sup> Conversely, a firm with market power has the ability to individually affect either the total quantity or the prevailing price in the market<sup>28</sup>; for obvious reasons, such behaviour could lead to adverse competitive effects within a market.

Market power assessment archetypes have been traditionally based on the identification of the relevant product market and on market share indicators within the context of linear markets and tangible goods/services.

Neoclassical matrix such as “interchangeability” and the “test of small but significant and non-transitory increase in price” (“SNIP” test) lie at the very core of the identification of relevant product market.

The concept of interchangeability of products is based on the reaction end users would have in case a specific product was to be withdrawn from the market; if consumers would, in that case, shift on to other similar products that would be an indication that all the products considered are interchangeable with one another, and hence belong to the same product market.<sup>29</sup>

On its part, the SNIP test evaluates the impact of a small but significant and non-transitory increase in price (within the range of 5/10%) of a specific product; like with the interchangeability test, if consumers switch to different goods due to the price increase, it is likely that all the products considered belong to the same relevant product market.<sup>30</sup>

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<sup>26</sup> See V. Massimiliano "The Ordoliberal notion of market power: an institutionalist reassessment". European Competition Journal., 2010, 6 (3), pp. 689–707.

<sup>27</sup> ^ Davis D.D. (2008), “Market Power and Collusion in Laboratory Markets”. In: Palgrave Macmillan (eds) The New Palgrave Dictionary of Economics. Palgrave Macmillan, London

<sup>28</sup> Gerard Debreu, *Theory of Value: An Axiomatic Analysis of Economic Equilibrium*, Yale University Press, New Haven CT (September 10, 1972).

<sup>29</sup> John Vickers (2006) *Market Power in Competition Cases*, *European Competition Journal*, 2:sup1, 3-14, DOI: 10.5235/ecj.v2n1s.3

<sup>30</sup> See J. Gregory Sidak & David J. Teece, *Rewriting the Horizontal Merger Guidelines in the Name of Dynamic Competition*, 16 GEO. MASON L. REV. 885, 887 (2009); J. Gregory Sidak & David J. Teece, *Dynamic Competition in Antitrust Law*, 5 J. COMPETITION L. & ECON. 581, 584 (2009), <https://www.criterioneconomics.com/dynamic-competition-in-antitrust-law.html>. See also Guidelines on relevant market definition with a view to determining the significant market share (www.globalcompetitionforum.org).

<sup>30</sup> See G. Werden, "The 1982 Merger Guidelines and the Ascent of the Hypothetical Monopolist Paradigm," *Antitrust Law Review*, vol. 71 (2003), pp. 253-269.

Within the big data economy context, the utilisation of traditional archetypes such as the “interchangeability” and the “SNIP” test poses serious intricacies; this is due to the multi-sided and extremely dynamic nature of big data markets, and to the crucial need to capture the likely future effects on competition, rather than focusing on the analysis of current pricing factors.

Furthermore, over reliance on price denominators in assessing the relevant product market in digital markets could lead to misleading results since in such markets price does not represent the pivotal criterion for end users’ decisions.<sup>31</sup>

As will be readily appreciated, these considerations appear to be corroborated by the evaluation of the current status quo in the EU and UK considered in the following. The analysis will focus on the intersection between big data markets and market power, with emphasis on the EU position in relation to Mergers, abuses of dominant position, the Database Directive, as well as references to the UK Scenario.

### *Market power and EU Big Data Mergers*

The approach used by the Commission in the assessment of mergers in the big data sector reveals that no newfound theory has yet been elaborated as to how competition law should embrace the assessment of market power in this sector of the economy.

One of the first noteworthy mergers in the big data sector involved *Google and DoubleClick*<sup>32</sup>, with the main aim of the transaction being to combine data sets in order to profit from personalised and targeted advertisements. The merger was cleared by both the US Federal Trade Commission (“FTC”) and the European Commission on the basis of the assessment of the combined market share of the two undertakings involved in the transaction.

Interestingly, both the US and EU competition authorities conducted the market power assessment on the basis of traditional turnover-based jurisdictional thresholds, as well as on classical relevant market definitions.

No consideration was given to the way the combination of Google and DoubleClick affected the evolution of the entire online advertising sector. Equally, no attention was devoted

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<sup>31</sup> David S. Evans & Michael Noel, “The analysis of mergers that involve multi-sided platform businesses”, 4 J. COMPETITION L. & ECON. 663 (2009) and L. Filistrucchi, *A SSNIP test for two-sided markets: the case of media*, 34 NET Institute Working Papers, (2008).

<sup>32</sup> Commission Decision *Google/ DoubleClick* declaring a concentration to be compatible with the common market and the functioning of the EEA Agreement, Case No COMP/M.4731, 11/03/2008.



to existing network effects, and the remarkable additional permutations the transaction ignited between the online platforms involved, the advertising industry and end users.<sup>33</sup>

Although part of the doctrine endorses the possibility to adapt the traditional market power assessment tools to the big data sector<sup>34</sup>, this does not appear to be the optimal solution; exclusive reliance on classical assessment criteria for measuring market power in the big data market does give rise to concerns. There are theoretical and practical reasons for that.

First, neoclassical market share-based and pricing assessment matrix have been theorised for the assessment of market power in single-sided markets, and their transposition to two-sided platforms have traditionally proven to be of difficult execution due to the peculiar nature of such markets.<sup>35</sup>

It needs to be emphasised that neoclassical market power assessment tools have been devised for traditional and ‘tangible’ markets, and their adaptation to online platforms is proven to be particularly problematic. This is due to the fact that undertakings operating in the big data sector generating a small turnover may still acquire remarkable market power which far transcends the entity of their market share (as a result of being valuable data holders).

Therefore, market shares and turnover indicators may arguably represent misleading tools for the assessment of market power in this new sector of the economy.

Combined market shares have been nonetheless yet again the decisive factor in the clearance of the merger between *Facebook* and *WhatsApp*<sup>36</sup>, where the scope of the merger

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<sup>33</sup> In the same vein, in its decision in *Reuters/Thomson*, the European Commission cleared the merger between Thomson’s and Reuters’. The main competition concerns arising from the merger related to the possibility of the creation of serious barriers to entry to the market by other competitors due to the difficulties of the latter to accumulate a financial data base comparable to the combined post-merger data set of Thomson and Reuters. Ultimately, like with Google and Double Click merger, the transaction was cleared due to the combined market shares of the undertakings involved not exceeding the thresholds of the EU Merger Regulation, and the requirement that the parties involved in the merger to provide their competitors with access to certain financial and economic data set belonging to Thomson Reuters.

<sup>34</sup> See R. Nazzini, “*Online Platforms and Antitrust: Where Do We Go From Here?*”, (2018) 5 Italian Antitrust Review 5, p. 16.

<sup>35</sup> Kate Collyer, Hugh Mullan and Natalie Timan, “*Measuring market power in multi-sided markets*”, Hearing on Re-thinking the use of traditional antitrust enforcement tools in multi-sided markets, DAF/COMP/WD(2017)35/FINAL, available at:

[https://one.oecd.org/document/DAF/COMP/WD\(2017\)35/FINAL/en/pdf](https://one.oecd.org/document/DAF/COMP/WD(2017)35/FINAL/en/pdf)

Extensive economic literature on multi-sided markets clearly points out that network effects alter the strategic conduct of undertakings modifying, thus, the competition environment. The Impact of Openness on the Market Potential of Multisided Platforms: A Case Study of Mobile Payment Platforms, 30 J. INFO. TECH. 260, 261 (2015); David Evans, Background Note, in POLICY ROUNDTABLES: TWO-SIDED MARKETS 23, 29 (Organisation for Economic Co-operation and Development Competition Committee, 2009); David S. Evans & Richard Schmalensee, The Industrial Organization of Markets with Two-Sided Platforms, 3 COMPETITION POL’Y INT’L 151, 152 (2007).

<sup>36</sup> Commission Decision *Facebook/WhatsApp* imposing fines under Article 14(1) of Council Regulation (EC) No. 139/2004 for the supply by an undertaking of incorrect or misleading information, Case No M.8228, 17.5.2017.

was to enable Facebook to enhance its ability to focus the target of its advertisements through the data generated by WhatsApp<sup>37</sup>.

Yet again, the European Commission focused its market power analysis on the role played by data reaching the conclusion that “the consumer communications apps market is fast growing and characterised by short innovation cycles in which market positions are often reshuffled”<sup>38</sup>, hence implicitly admitting that the identification of market power is constantly evolving and that it may elude traditional pre-conceived antitrust assessment criteria.

It is worth noting that, in this case, the European Commission did assess the possibility for Facebook to strengthen its position in the market for online advertising as a result of the merger, despite the fact that WhatsApp was not even present in this market.

This appears to attest the need for the development of a new paradigm for the assessment of market power in the big data sector which transcends the traditional parameters of market definition and role of market shares. Rather than focusing on the current market power of the parties, a forward-looking approach should be arguably preferable, as big data markets are very dynamic and may not even exist at the time of a merger assessment.

Another example of the dangers posed by the over reliance on traditional market power assessment criteria is represented by the acquisition of *LinkedIn* by *Microsoft*.<sup>39</sup> Here, the limited combined market share of the parties in the market for online advertising services played a decisive role in the clearing of the merger; the assessment of the Commission was, thus, yet again clearly overly reliant on the traditional tools for the assessment of market power in one-sided markets.

The data market value was not considered to be of relevance in the assessment of the post-merger market power. This is quite peculiar, especially if one considers that LinkedIn is a platform with more than 400 million people, and that it possesses data on professional profiles and on network connections.

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<sup>37</sup> The combine market share criterion has been used by the Commission to clear mergers in: *Microsoft/Skype*, 7 October 2011, COMP M. 8124; *Telefonica UK/Vodafone UK/Everything Everywhere/JV*, 4 September 2012, COMP/M. 6314, para 191; *Publicis/Omnicom*, 9 January 2014, COMP M. 7023, para 619;

<sup>38</sup> Commission Press Release on the approval of the acquisition of WhatsApp by Facebook, 3/10/2020, available at: [https://ec.europa.eu/commission/presscorner/detail/en/ip\\_14\\_1088](https://ec.europa.eu/commission/presscorner/detail/en/ip_14_1088)

<sup>39</sup> Commission Decision *Microsoft/LinkedIn*, declaring a concentration to be compatible with the common market and the functioning of the EEA Agreement, Case No COMP/M.8124, 6/12/2016.

## *Market power and Abuse of dominant position by big Data undertaking: the EU perspective*

A study conducted by the German *Monopolkommission* has emphasised that abuse of dominant position in data-driven markets mainly assumes two forms; exclusionary abuse and exploitative abuse.<sup>40</sup>

Yet again, network externalities are due to play a crucial role here, with forms of exclusionary abuse and exploitative abuse of dominant position by technology leviathans being further exacerbated by indirect network effects characterising the big data industry.

Exclusionary abuse may arise from the capacity of a big data dominant undertaking of leveraging market power to adjacent markets via forms of vertical integration with other big data undertakings. Such exclusionary conducts can lead to access foreclosure to the market, and to preventing consumers from leaving specific big data ecosystems<sup>41</sup>.

Exploitative abuses, on the other hand, may assume the form of exploitation of data, or may lead to the artificial limitation of advertising or of other online related services.<sup>42</sup>

Apart from forcing the fusion of new business platforms or market segments into bigger ecosystems, leveraging of market power in the big data sector could enable dominant undertakings to commit abuses in downstream or completely unrelated markets. For instance, big data undertakings such as Google, Apple or Amazon could leverage their market power into other sectors of the online business sector (e.g. advertising) foreclosing access to the market by new undertakings.<sup>43</sup>

Equally, by using forms of so called ‘defensive leveraging’, dominant big data undertakings may prevent entry into the markets where their dominance is already established by undertakings from adjacent market, in an attempt to protect their dominant positions.<sup>44</sup>

Leveraging of market power has been stigmatised by the EU courts in the *Microsoft* decision.<sup>45</sup> The European Courts and the Commission found that Microsoft abused its dominant position by leveraging its near monopoly in the market for PC operating systems onto the

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<sup>40</sup> See the German Monopolies Commission (*Monopolkommission*), ‘*Competition policy: The Challenge of Digital Markets*’ (2015) Special Report No 68, p. 114.

<sup>41</sup> *Ibid.*

<sup>42</sup> *Ibid.*

<sup>43</sup> See A. Capobianco and A. Nyeso, ‘*Challenges for Competition Law Enforcement and Policy in the Digital Economy*’ (2018) 9 *Journal of European Competition Law & Practice* No. 1, 26.

<sup>44</sup> Nikolai Van Gorp and Olga Batura, ‘*Challenges for Competition Policy in a Digitalised Economy*’, A study for the ECON Committee, Directorate General for Internal Policies, European Parliament, July 2015, IP/A/ECON/2014-12 PE 542.235, 61. See also Evelin Hlina, ‘*Dominant Undertakings in the Digital Era: A Call for Evolution of the Competition Policy towards Article 102 TFEU?*’ (2016) 9 *ICC Global Antitrust Review*.

<sup>45</sup> Case T – 201/4 *Microsoft Corp. v Commission of the European Communities* [2007] ECLI:EU:T:2007:289, para 1095.

markets for work group server operating systems and for media players. This conduct was found to have hindered innovation in the markets concerned to the detriment of consumers<sup>46</sup>.

Exploitative abuse through self-preferencing was found to be relevant the *Google Search (Shopping)* case.<sup>47</sup> The Commission's conclusion was that the more favourable positioning and display in Google's general search results pages of Google's own comparison-shopping service compared to competing comparison-shopping services constituted an abuse of dominant position.

Google was found to promote its own services by decreasing traffic to rival shopping services from its own search results page.<sup>48</sup> The Commission stated that traffic to comparison-shopping services is mostly through general search services of Google and the conduct of Google created a situation whereby rival comparison-shopping services were effectively excluded from the market.<sup>49</sup>

If in both in *Microsoft* and *Google Search (Shopping)* the position of dominance of both data-giant could be evinced by an assessment of market power conducted on the basis of neoclassical market share indicators, it needs to be emphasised that the aforementioned exclusionary and exploitative abuses in data driven markets are strictly linked to the strong indirect network effects and the possibility of access to data. Those traits foster forms of exclusionary abuses as well as contributing to defensive leveraging strategies.<sup>50</sup>

That is why an assessment of market power solely conducted on the basis of neoclassical paradigms such as market shares indicators might lead to misleading outcomes. A specific big data undertaking might not be in an 'apparent dominant position' in a given market; nevertheless, the possession of data and the synergies generated by network externalities might as well confer upon said big data undertaking a level of market power which can determine dominance.

Indeed, the implementation of digital technologies has generated new data-driven platforms and network inter-connections of online ecosystems perfectly capable of generating scenarios of "non-apparent dominance".

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<sup>46</sup> *Ibid.*, at para 1119.

<sup>47</sup> Case No COMP/AT.39740, *Google Search (Shopping)* [2017] 4444 Final.

<sup>48</sup> Case No COMP/AT.39740, *Google Search (Shopping)* [2017] 4444 Final, section 7.2.3.

<sup>49</sup> Case No COMP/AT.39740, *Google Search (Shopping)* [2017] 4444 Final, section 7.2.4.

<sup>50</sup> Jacques Crémer, Yves-Alexandre de Montjoye and Heike Schweitzer, *Competition Policy for the Digital Era : Final Report* (Publications Office of the European Union 2019), 66, Available at: [http://ec.europa.eu/competition/information/digitisation\\_2018/report\\_en.html](http://ec.europa.eu/competition/information/digitisation_2018/report_en.html).

Identification of market power is therefore more than ever essential in terms of identifying dominant undertakings and prevent conducts which may become abusive, harm innovation and generate exclusionary effects.

Network externalities are certainly an important factor to be considered in terms of assessment of market power in the big data sector, alongside possible synergies between combined platforms, advertisers, and end users.

Further complexities arise from the system of protection for databases enacted by the implementation of the Database Directive considered below.<sup>51</sup>

### *Market Power in the Big Data Sector and the Database Directive*

A database is defined by the Database Directive as a “collection of independent works, data or other materials arranged in systematic or methodical way and individually accessible by electronic or other means.”<sup>52</sup>

The Database Directive offers two types of protection to databases holders: first, copyright protection for the intellectual creation involved in the selection and arrangements of materials (providing that such databases fulfil the requirements for creativity of the work as laid by the Directive itself).<sup>53</sup>

Secondly, the Directive offers *sui generis* protection for an investment in the obtaining, verification or presentation of the contents of the database.<sup>54</sup>

Exclusivity and protection of data sets can give rise to market power concerns; notwithstanding the limitations laid down by the Directive itself<sup>55</sup>, the possibility for big data undertakings to collect a large amount of data and benefit from the protection granted by the Database Directive can create a scenario of market power concentration within data-driven markets.

Indeed, the potential anticompetitive impact of the database right on the information market can even be much greater than that, for instance, of copyright. Whereas the exclusivity of copyright ownership sees its essential limitation in the creative expression that is peculiar to the author of a work, leaving open the possibility of the creation of alternative forms of

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<sup>51</sup> Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases, OJ L 77, 27.3.1996, p. 20–28.

<sup>52</sup> *Ibid.*, Art. 1(2). For a detailed analysis of the Database Directive see R. Merkin & J. Blake, “*Legal Protection of Databases*”, in “*Copyright and Designs Law*”, Sweet&Maxwell, London, 2021, at 15A.

<sup>53</sup> Directive 96/9/EC, above, Art. 3 and 4.

<sup>54</sup> *Ibid.*, Art. 7 and 9.

<sup>55</sup> *Ibid.*, Art.5 and 9.

expression to other authors, the database right creates a situation of ‘monopoly in collections of facts’ which does not leave much space for forms of alternative intervention<sup>56</sup>.

If the archetypal idea/expression paradigm prevents copyright from extending its effects on essential resources such as facts and alternative ideas, the database right, by contrast, bestows significant market power on databases creators.

In cases where databases are the only source of information, the database right might even translate from an economic standpoint in a “near-absolute downstream information monopoly in derivative information products or services”<sup>57</sup>.

Albeit such positions of dominance are not prohibited *per se* by competition law, and are to be expected in any market as a result of evolutionary process of Darwinian fashion, antitrust authorities need to be in the possession of defined tools for an accurate evaluation of market power in the big data sector.

It deserves to be emphasised that the paradigm of protection offered by the Database Directive is capable of interfering with neoclassical matrix of market power assessment such as market shares indicators. Indeed, low market shares big data undertakings in possession of valuable data sets protected by the Directive might in reality possess considerable market power; they could be able, as a result, to distort competition in a specific sector of the online market.

That is the reason why criteria such as the possibility of configuring data sets as essential facilities, contestability of the market and barriers to entry are due to play, as will be unfolded in the following, a crucial role in the theorisation of a new archetype for the identification of market power in data driven markets.

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<sup>56</sup> On this point see B. Hugenholtz, “*Abuse of Database Right under the EU Database Directive*”, in F. Lévêque & H. Shelanski (eds.), *Antitrust, patents and copyright: EU and US perspectives*, Cheltenham: Edward Elgar 2005, p. 203-219.

<sup>57</sup> *Ibid.*, at p. 203. This has happened in the EU, where single-source data holders, such as telephone service undertakings or broadcasters have relied upon the Database Directive in order to effectively acquire a monopoly in downstream markets in telephone subscriber data, or TV schedule information (see e.g. ADV-Firmenbuch, Austrian Supreme Court (Oberste Gerichtshof), 9 April 2002 (Republic of Austria's refusal to license data from public trade register considered abuse of database right), available at <http://www.ivir.nl/files/database/index.html>. On this point see also, See A. Kamperman Sanders, 'Intellectuele eigendom na HvJEG IMS Health / NDC Health: de dwanglicentie in opmars?', 28 [2004] AMI 124-132, and B. Hugenholtz, “*Abuse of Database Right under the EU Database Directive*”, above, at p. 212.

## *Big Data and Market Power: the UK Scenario*

The aforementioned considerations made in relation to the EU scenario are equally applicable to the UK, notwithstanding the dawn of the post-Brexit era.

In January 2019, the UK Government promulgated the Competition (Amendment etc) (EU Exit) Regulations 2019<sup>58</sup>. The primary scope of the Regulations was to repeal arts 101 and 102 of the TFEU and the EU Merger Regulation (alongside other related regulations), by creating a standalone UK competition regime.

Despite the aforementioned legislative changes, it is worth noticing that the EU competition law framework is continued to be enforced post-Brexit vis-à-vis agreements or conduct of UK international property firms capable of having effect within the EU. Any UK big data undertaking will therefore continue to be subject to EU competition rules; this is particularly relevant to the data-driven industry due to its atavistic international and European dimensions.

Furthermore, in substantive terms UK competition law is very akin to EU competition law, and section 60 of the UK Competition Act 1998 requires to interpret the UK competition framework in light of the case law of the European Courts<sup>59</sup>.

Finally, it deserves to be outlined that the exit of the UK will not have an impact on the EU assessment of mergers that involve UK and EU international property undertakings, or that have an EU dimension. This entails that, if the EU Merger Regulation thresholds are met, the big data undertakings involved in the merger will still owe duties to the EU Commission and are subject to the EU mergers regime.

In light of the aforementioned findings made in reference to the current status quo, the following part of this article will attempt to theorise a new approach for the identification of market power in the big data industry.

### **Big Data and market power: time for the theorisation of a new paradigm?**

The time appears ripe for reconsidering the concept of market power as defined in its classical connotations and its application to the big data industry.

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<sup>58</sup> Competition (Amendment etc) (EU Exit) Regulations 2019.

<sup>59</sup> See S. 60 Competition Act 1998.

A prior question to any attempt to devise a new theoretical postulation for the identification of market power in the big data industry lies with the re-consideration of the atavistic traits of digital markets in conjunction with essential economic connotations such as contestability, barriers to entry and the concept of essential facility.<sup>60</sup>

As mentioned in the above, the presence of indicators that inform contestability of a market, such as barriers to entry, rather the presence of alternative ways to reach end users is, indeed, destined to shape and mould any possible attempt of theoretical conceptualisation of market power; in presence of contestable traits, market power assessment should consider the presence of barriers to entry as indicators of market power.

The same considerations apply to the concept of essential facility; if we can theorise specific data sets as an essential facility, the assessment of market power should consequently focus also on the nature of the data at stake and its accessibility. All this shall be unfolded below.

### *The contestability of digital markets*

The theory of contestable markets maintains that even if markets may be served by a restricted number of firms, that would not necessarily entail a loss of the competitive equilibrium (and therefore desirable welfare outcomes), because of the existence of potential short-term entrants.<sup>61</sup>

A perfectly contestable market has two main connotations: it is a market that has no entry or exit barriers, and within which firms have access to the same level of technology (to incumbent firms and new entrants).<sup>62</sup>

Since a perfectly contestable market is a theoretical paradigm hardly possible in real life, markets must be assessed in terms of ‘degree’ of contestability; the higher the contestability degree, the closer a market will be to a perfectly contestable market.

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<sup>60</sup> In the *Facebook/WhatsApp* merger the European Commission has already focused more on the network effects and number of other market participants that collect user data alongside Facebook, (*ibid.*, at para 219). In the *Microsoft/Yahoo!* case the European Commission considered the scale of data collection as the feature able to enhance market power (*ibid.*, at para 116).

<sup>61</sup> On the theory of contestability of markets see, inter alia, W. J. Baumol, “Contestable Markets: an Uprising in the Theory of Industry Structure” (1982) 72 *American Economic Review* 1; J. S. Bain, *Barriers to New Competition* (Cambridge, MA: Harvard University Press, 1956); W. J. Baumol, E. E. Bailey and R. D. Willig, “Weak Invisible Hand Theorems on the Sustainability of Multiproduct Natural Monopoly” (1977) 67 *American Economic Review* 350; J. C. Panzar and R. D. Willig, *Contestable Markets and the Theory of Industry Structure* (San Diego: Harcourt Brace Jovanovich, 1982); M. A. Adelman, “Comment on the ‘H’ concentration measure as a numbers equivalent” (1969) 51 *Review of Economics and Statistics* 99.

<sup>62</sup> W. A. Brock, “*Contestable Markets and the Theory of Industry Structure: A Review Article*” (1983) 91 *Journal of Political Economy* 1055.



To this end, low barriers to entry and exit represent fundamental features of contestable markets, with a perfectly contestable market having no barriers to entry or exit in what has been theorised as “frictionless reversible entry.”<sup>63</sup>

Conversely, in case of significant barriers to entry, the threat of competition would be far less, and could not act as a counterbalancing factor vis-à-vis the scarce presence of undertakings in a given market, and the industry would probably operate as the theory of monopoly suggests it will.

If we were to apply this line of reasoning to the big data industry, the contestability theory appears to rebut the classic paradigm whereby concentration inevitably leads to adverse competition conditions; the presence of a relatively low number of big data undertakings within the market should not, therefore, be necessarily considered as an indicator of an unbalanced competition scenario.

A key counteracting factor when it comes to the idea of contestability is represented by the presence of low barriers to entry. In that regard, if established online undertakings are in possession of sets of data of unique nature and of difficult replication, that could lead to market foreclosure vis-a-vis new entrants not capable of having access to the data in question. In extreme scenarios this could lead to monopolisation of data-related markets.

In recent years, a Report on big data and competition law published by French Competition Authority and the German Bundeskartellamt, has been pointed out that where “access to a large volume or variety of data is important in ensuring competitiveness on the market (which is a market-specific question), the collection of data may result in entry barriers when new entrants are unable either to collect the data or to buy access to the same kind of data, in terms of volume and/or variety, as established companies.”<sup>64</sup> The Study draws a correlation between big data scenarios giving rise to entry barriers and the concept of market power; indeed, the more big data is capable of creating barriers to entry, the higher the indicator of market power; emphasis should, thus, be put on the value of data sets.<sup>65</sup>

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<sup>63</sup> See Brock, “Contestable Markets and the Theory of Industry Structure: A Review Article” (1983) 91 *Journal of Political Economy* 1055.

<sup>64</sup> On May 10, 2016, the French Competition Authority (the “FCA”) and the German Bundeskartellamt (the “BKA”) published a joint paper on data and its implications for competition law. The joint paper is available at: [https://www.bundeskartellamt.de/SharedDocs/Publikation/DE/Berichte/Big%20Data%20Papier.pdf;jsessionid=9D99A2F57FC10863483553D71101D1B0.2\\_cid390?\\_\\_blob=publicationFile&v=2](https://www.bundeskartellamt.de/SharedDocs/Publikation/DE/Berichte/Big%20Data%20Papier.pdf;jsessionid=9D99A2F57FC10863483553D71101D1B0.2_cid390?__blob=publicationFile&v=2)

<sup>65</sup> See the French Competition Authority (the “FCA”) and the German Bundeskartellamt “*Joint Report on data and its implications for competition law*”, above at p. 49.

Market value of data sets is indeed an important market power indicator; nevertheless, it is submitted that also the nature and availability of data represent, alongside with the availability of alternative resources, crucial aspects of the big data and market power conundrum.

A distinction in terms of nature of data needs to be drawn, as that would have specific repercussions in terms of assessment of market power. For instance, in absence of exclusive agreements, purchasable third-party data could be acquired by any party willing to pay its price. As with any other input, under those circumstances the presence of barriers to entry would be strictly linked to the value/cost of data.<sup>66</sup>

Conversely, the situation would be radically different in case of unique first-party data, as access to that data would be foreclosed to third party market operators. Under those specific circumstances, the uniqueness of the data paired with the lack of alternative resources could indeed create barriers to entry and represent, in contestability terms, an indicator of market power.<sup>67</sup>

The first party data scenario poses a further intricacy: first party data collected by undertakings on their own products/services, albeit unique *per se*, would not have an adverse effect vis-à-vis competitors, as they would also be in the position to collect their own data in relation to their products/services.

An even more complex scenario does arise in relation to first-party data collected on other undertakings or on consumers, due to the variety of sources, and the diverse purpose served by the data collected. Once again, a key factor is hereby represented by the uniqueness of the set of data considered and how interchangeable it is with other datasets available in the market.

Far from being straightforward, assessing the interchangeability of data sets is a task of difficult execution even when it comes to similar undertakings operating within the same market. The needs of a niche online undertaking to acquire data in order to advertise/sell a specific product would be more confined compared to a global undertaking.

The traits of data sets may differ quite significantly; data on frequently purchased products (e.g. food or books) is less time sensitive than information on consumer behaviour when it comes to expensive and less frequently acquired products such as real estate properties.

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<sup>66</sup> Greg Sivinski, Alex Okuliar & Lars Kjolbye, “Is big data a big deal? A competition law approach to big data, *European Competition Journal*” (2017), 13:2-3, 199-227, page 209.

<sup>67</sup> See Robert P. Mankhe, ‘*Big data as a Barrier to Entry*’ (2015) 2 *Competition Policy International Antitrust Chronicle*. See also Commission Decision *Microsoft/LinkedIn*, above(n 14), paragraph 261.

The cost deriving from data collection will also vary quite drastically, as will the alternative sources available; all this could also contribute to the creation of barriers to entry undermining the contestability of the big data market concerned.<sup>68</sup>

The question which needs to be addressed is how to specifically determine the concept of market power within the big data sector. Unfortunately, the answer to that question is not straightforward, since, as it has been pointed out in the literature, “the mere fact that a particular dataset – even a highly valuable one - is unique and non-replicable does not imply that competitors necessarily need access to the same or even similar data to compete.”<sup>69</sup>

Another crucial aspect which has not been comprehensively explored by the current literature, as yet, relates to the interface between big data markets and the doctrine of essential facility.

### *Big data as an essential facility?*

The essential facility doctrine is based on the idea that one or more undertakings operating within a specific market in possession of a facility deemed to be essential to operate in that market should be required to provide access to that facility unless some aspects of it foreclose shared accessibility.<sup>70</sup>

The essential facility doctrine portrays a specific anti-monopolisation claim, whereby an undertaking controlling a qualifying "essential facility" is under the obligation to grant non-discriminatory access to it to its competitors. The doctrine originated in the United States, where four elements necessary to establish liability under the essential facility doctrine have been theorised: 1) control of the essential facility by a dominant undertaking; 2) a competitor's inability practically or reasonably to duplicate the essential facility; 3) the denial of the use of the facility to a competitor; and 4) the feasibility of providing the facility.<sup>71</sup>

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<sup>68</sup> On this point see Andres V. Lerner, *The Role of 'Big Data' in Online Platform Competition* (2014), [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2482780](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2482780), p.24.

<sup>69</sup> See the French Competition Authority (the “FCA”) and the German Bundeskartellamt Joint Report on data and its implications for competition law, above at p 79.

<sup>70</sup> See Robert Pitofsky, “*The Essential Facilities Doctrine Under United States Antitrust Law*”, 70 *Antitrust L.J.* 443 (200); Abbott B. Lipsky, Jr. & J. Gregory Sidak, “*Essential Facilities*”, 51 *Stan. L. Rev.* 1187, 1190–91 (1999). Massadeh, Ali A., “*The Essential Facilities Doctrine Under Scrutiny: EU and US Perspective*” (January 11, 2011). UEA Law Working Paper No. 2011-AM-1, Available at SSRN: <https://ssrn.com/abstract=1738326>. See also James R. Ratner, “*Should there be an essential facility doctrine*”(1988) 21, *U.C. Davis Law Review*, 327.

<sup>71</sup> See *Verizon Communications, Inc. v. Trinko*, 124 S.Ct. 872, 881 (2004) (asserting that the Supreme Court never acknowledged the essential facility doctrine, though it declined "to recognize it or to repudiate it" in that specific case); *MCI v. AT&T*, 708 F.2d 1081, 1132 (7th Cir. 1983); *Hecht v. Pro-Football, Inc.*, 570 F.2d 982, 992-93 (D.C. Cir. 1977)..

The European Courts have attempted to provide general indicators in relation to the concept of essential facility in *Microsoft*<sup>72</sup>, *IMS*<sup>73</sup> and *Bronner*<sup>74</sup>; such requirements posit the existence of an “essential facility” if access to a product is indispensable for providing a specific service, or if refusal to access prevents the development of a new product for which there is a potential in terms of consumer demand<sup>75</sup>. Other traits entail that refusal is not justified by objective considerations, and that refusal to supply the essential facility could lead to the foreclosure of competition in a secondary market.

The indispensability of a product or service arises only in absence of alternative products or services and in presence of technological, legal, or economic constraints which render it impossible or unreasonably arduous for any undertaking operating in the downstream market to develop products or services. For instance, in case of first-party data not made available to third parties, it would be crucial to identify the traits which qualify a set of data as an essential facility.

The concept of essential facility appears, thus, to be inherently linked with barriers to entry, and it is a clear indicator of market power; indeed, the undertaking in possession of an essential facility could use its market power to completely foreclose competition by denying competitors entry into the market.

According to the literature, the defining traits of an essential facility in the big data sector would be fulfilled in case it is “demonstrated that the data owned by the incumbent is truly unique and that there is no possibility for the competitor to obtain the data that it needs to perform its services.”<sup>76</sup>

This statement appears to be *prima facie* in line with the EU courts’ jurisprudence; nevertheless, a distinction needs to be made between third-party big data and first party big data. Indeed, first-party data collected by a large player for product development and testing

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<sup>72</sup> Case T-201/04, *Microsoft Corp. v Commission*, ECR [2007] II-3601)

<sup>73</sup> Joined Cases C-241 & C-242/91 *P, Radio Telefis Eireann v. Comm'n of the Eur. Cmty.*, 1995 E.C.R. 1-743.

<sup>74</sup> Case C-7/97, *Oscar Bronner GmbH & Co. KG v. Mediaprint Zeitungs- und Zeitschriftenverlag GmbH & Co. KG*, 1998 E.C.R. 1-7791.

<sup>75</sup> In Europe, the expression “essential facilities” was used by the Commission for the first time in the Decision *Sealink* 94/19/ EC, 1994 O.J. (L 15) 8 (although references to the doctrine can be found in earlier decisions (see, e.g. Commission Decision *British Midland v. Aer Lingus* 92/213/EEC, 1992 O.J. (L 96) 34). In *Sealink*, the Commission ruled that an undertaking which occupies a dominant position in the provision of an essential facility and itself uses that facility (i.e. a facility or infrastructure, without access to which competitors cannot provide services to their customers), and which refuses other companies access to that facility without objective justification or grants access to competitors only on terms less [favourable] than those which it gives its own services, infringes Article 102 [82 of the EC Treaty]. *Sealink*, 1992 O.J. (L 96) 34, 66.

<sup>76</sup> See the French Competition Authority (the “FCA”) and the German Bundeskartellamt Joint Report on data and its implications for competition law, above at p.

may not necessarily generate barriers to entry, as unique as it might possibly be, whereas the actual cost of data collection and processing might be so prohibitive as to actually generate barriers to entry and ignite the application of the essential facility doctrine.

The aforementioned literature does not take into account that even if the data in question are unique and not otherwise available to competitors, the general traits of the essential facility doctrine would only require access in order to enable third parties to develop products/services in the downstream market.

Provided that is the case, the access seeker would have to prove that obtaining access to the data in question is essential in order to develop a specific product or to provide a service, and the absence of suitable alternatives to do so.

Whether the need for data meets the required standards would depend on the data and the purpose for which the non-dominant company needs it. In case data is needed in order to develop a specific type of advertising service, the inherently short-lived value of the data would render the qualification of the data in question as an essential facility a task of extremely difficult execution.

The possible qualification of data set as an essential facility is ever so important in especially in light of exclusive proprietary data set rights granted by the aforementioned Database Directive and it epitomises that the application of traditional competition law paradigms for the identification of market power in the big data sector requires new forms of theorisation. An attempt to identify a possible way forward shall be unveiled in the following.

### **The way forward: redrawing the theoretical map for the identification of market power in the big data sector**

As established in the above, traditional tools for the identification of the relevant market such as market shares matrix and the interchangeability and SSNIP tests are likely to represent inefficient market power indicators due to the *sui generis* characteristics of data and its peculiar nature.

In some cases, due to the inherent evolutionary nature of data sets, the relevant product market may not even be in existence yet when the market power test is conducted. The antitrust assessment should therefore also focus on how the future scenario is destined (or likely) to unfold within the context of the specific market considered; indeed, the antitrust connotation of data sets differs quite dramatically depending on the availability of similar data, the volume of data requested for the chosen purpose and on diminishing return value of the data over time.

The difficulty in the assessment of market power in this sector of the economy is further exacerbated by the configuration of possible contestability traits and the possibility, in some cases, to conceptualise big data as an essential facility.

How should market power be assessed within the big data industry then? First of all, in terms of identification of the relevant market, it is suggested that the approach adopted by competition authorities should be dynamic, forward looking and based on the assessment of the nature of the data.

Rather than being entirely based on traditional substitutability connotations, it is submitted that the identification of the relevant product market also needs to focus on the existence of alternative data, on the presence of means to process data sets, and the possibility of creation of barriers to entry.

The novelty of the theorised approach lies with the necessity to establish a linkage between the notion of relevant product market with the concept of big data as an essential facility, market contestability indicators and the existence of barriers to entry.

In terms of identification of the relevant geographic market, due to the *sui generis* nature of online platforms, the relevant geographic market ought to be considered of global dimension unless specific circumstances suggest otherwise.

Once the relevant market is identified, the next step is represented by the theorisation of a new paradigm for the identification of market power.

Considering the observations made in relation to the peculiar nature of the big data sector, a new test could be devised in order to identify the traits of market power in the big data industry. It is suggested that the proposed test should encompass three cumulative levels of assessment, as follows: a) the assessment of network effects; b) the evaluation of the nature and the economies of scale of the data, and c) contestability and the possible qualification of data as an essential facility.

*a) The First step of assessment: network effects and market power*

Big data collection, storage and analysis portray several direct and indirect network effects traits that need to be considered from an antitrust perspective.

As a result, the first part of the proposed test would require an attentive scrutiny of the possibility of interactions and feedback loops between the different sides of the big data platforms. Instead of focusing on one part of the value chain to be considered in its isolation,

such analysis should encompass the evaluation of the possible feedback loops generated by the different iterations of said value chain.

The first network effect to be analysed relates to the number of end users of a specific online platform. This feedback loop runs within the lines of the equation more users equal more data, which, by generating a service improvement in turn leads to attracting more users. It has been pointed out that the presence of this feedback loop generates an increment in the cost of data collection for a new and small platform compared to a larger player.<sup>77</sup> This might represent one of the indicators of market power of the latter.

A further feedback loop is linked to the advertising side of a big data platform, and sees an interconnection between the equation ‘more users equals more data’ with the possibility of monetisation through advertising, which could lead to more users buying products, and, in turn, to the platform attracting more advertisers.<sup>78</sup>

In presence of such feedback loop, a new and small platform with a scarce number of users and data will experience more difficulties to streamline its ads and to attract advertisers compared to large platforms, yet again, signifying the presence of less intensity in terms of market power.

This first part of the test is therefore structured on the analysis of possible feedback loops based on: (i) the relationship between the number of users and data, and; (ii) the interaction between the number of users, data and advertisers. Such ramifications will need to be carefully scrutinised on a case-by-case basis and represent the first indicators of the intensity of market power in the big data sector.

The second step of the proposed test would divert the attention on to the evaluation of the nature and the economies of scale of data sets as considered in the following.

#### *b) The nature and the economies of scale of data as second phase of assessment*

The second part of the theorised test is based on the evaluation of the economies of scale in the data market, with specific reference to the marginal benefits produced by the collection of large data sets.

This phase of assessment should focus on the nature of the data considered, i.e., its replicability, its interaction with other sets of data, and its time depreciation value. If the data

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<sup>77</sup> The existence of the feedback loop depends on the relationship between the data and the service quality which in turn depends on the type of data and the type of application at hand (see Greg Sivinski, Alex Okuliar & Lars Kjolbye, “Is big data a big deal? A competition law approach to big data”, above, p. 213.

<sup>78</sup> *Ibid.*, p. 219.

is widely available, that would *prima facie* entail that we are in presence of an indicator of low market power, as the data itself could not be utilised as a tool to prevent or foreclose competition.

Nevertheless, this part of the test should also take into account the non-rivalrous nature of data, as indeed it is possible that more than one undertaking are in the position to collect the same or similar data set. As a consequence, the assessment of the economies of scale of data ought to take into account the technological means at disposal of the undertaking concerned; the cost of processing data could be considerably high, and only a few undertakings might possess the appropriate level of processing facilities to obtain the information required by the data in their possession.

This means that even in presence of data which could be easily replicated or collected an undertaking might still have high market power. The replicability of data, thus, needs to be strictly scrutinised alongside the capacity of processing it.

And this brings us to the last step of the proposed test based on an assessment of contestability, and the possible qualification of data as an essential facility.

*c) The last step: contestability and possible qualification of data sets as an essential facility*

The indispensability of a product or service arises only in absence of alternative products or services and in presence of technological, legal or economic constraints which render it impossible or unreasonably arduous for any undertaking operating in the downstream market to develop products or services.

Yet again, a distinction needs to be drawn between third-party big data and first party big data. Indeed, first-party data collected by a large player for product development and testing may not necessarily generate barriers to entry, as unique as it might possibly be, whereas the actual cost of data collection and processing might be so prohibitive as to actually generate barriers to entry and ignite the application of the essential facility doctrine.

Provided that is the case, the access seeker would have to prove that obtain access to the data in question is essential in order to develop a specific product or to provide a service, and the absence of suitable alternatives to do so.

Whether the need for data meets the required standard would depend on the data and the purpose for which the non-dominant company needs it. For instance, in case data is needed for the development of a specific type of advertising service, the inherently short-lived value



of the data would render the qualification of the data in question as an essential facility a task of difficult execution.

### **The new Big data market power test: an empirical perspective**

The proposed tripartite test could arguably represent a new paradigm for the identification of market power in the big data industry and constitute the starting point for the antitrust analysis in this sector of the economy.

By way of example, if applied to the aforementioned merger between *Google* and *DoubleClick*, the proposed test would have led to an interesting outcome in terms of assessment of market power. Like with any other big data market players, both *Google* and *DoubleClick* operate on a multisided platform, which sees web publishers selling advertising space on their internet pages in order to generate revenues, and on the other side of the platform, advertisers, who buy such space in order to place their advertisements on the internet and target the audience of internet users.

The application of the proposed test would have entailed the analysis of the network effects created by the proposed merger, with the first step being the evaluation of the number of end users of the online platform. If it is true that *Google* and *Double Click* did not individually appear as undertakings possessing noteworthy market power in the field of the provision of online advertising services, and attentive scrutiny of the feedback loops created by the combination of the two platforms would have allegedly generated competition concerns.

Indeed, a first feedback loop would see the creation of considerable synergies between the number of *Google* end users, the two platforms, and the data generated by the merger as a possible indicator of market power (this is due to the high number of *Google* users); as previously mentioned, such kind of feedback loop runs within the lines of the equation more users equal more data, which, by generating a service improvement in turn leads to attracting more users. Most definitely, the presence of this feedback loop generates an increment in the cost of data collection for a new and small platform compared to the power of the post-merger entity *Google – Double Click*.

A further feedback loop to be considered according to the proposed paradigm for the identification of market power in the big data market relates to the interconnection between number of users and the possibility of monetisation through advertising; this feedback loop also originates from the merger, with *Google* being in the position to streamline its ads by using *Double Click* data and attract advertisers.

The second phase of assessment of the proposed test is based on the evaluation of the economies of scale in the data market analysed, with specific reference to the marginal benefits produced by the collection of large data sets. The data in question relates to the ad serving technology data in possession of *Double Click* and the interaction with *Google* data on end users. In this case, the data considered is not unique, but quite replicable, although *Google* means to process it would give rise to some competition concerns.

Finally, the third and last stage of the proposed test would entail the necessity of qualifying the data in possession of *Google* and *Double Click* as an essential facility. As established in the above, this would require the definition of the nature of the data considered as unique and entail the necessity for a third party to have access to it in order to provide its services. This is clearly not the case here, due to the replicability of the data.

Based on the application of the theorised test the overall conclusion in relation to the identification of market power stemming out of the *Google* and *Double Click* merger would be that the merged entity is in possession of noteworthy market power, due to the characterisation of the post-mergers network effects permutations. This even if the other two elements of the proposed test, namely the assessment of the economies of scale of data and its configuration as an essential facility would not point towards the idea of a high market power presence.

The proposed test is purposely crafted so as to consider big data's three closest connotations to market power so as to produce a comprehensive analysis; the fulfilment of one of the three steps would represent an indicator of market power which would thereafter compel an evaluation of the nearest competitor's position of the undertaking concerned.

In similar vein, the application of the proposed test to the aforementioned *Microsoft / LinkedIn* merger, would lead to ascertaining the presence of distinctive high market power signs; this despite the limited combined market share of *Microsoft* and *LinkedIn* in the market for online advertising services.

The evaluation of the network effects created by the proposed merger would represent the first phase of assessment of market power intensity, with the initial step being the evaluation the number of end users of the online platform. Considering that *LinkedIn* is a platform with more than 400 million people, the amount of data on professional profiles and network of connections between them and their activities would be a relevant indicator of market power under the new paradigm.

Market power concerns do arise also in relation to the feedback loop created by the interface between the number of users and the possibility of capitalisation through advertising,

and this despite the allegedly limited presence of the two undertakings in the online advertising market noted by the Commission in its decision.

The second step of analysis is based on the consideration of the economies of scale of the data market, and of the marginal benefits produced by the collection of large data sets by the post-merged online platform. Yet again, the data market value was not considered to be of particular relevance in the assessment of the post-merger market power. This is quite peculiar, especially considering the high number of end users present in both platforms.

Finally, the essential facility configuration test would have led to the conclusion that we are not in presence of an essential facility due to the replicability of the data in question and the fact that two merging entities did not make their data available to third parties for advertising purposes.

Also in this case, the application of proposed test in its three distinct permutations would have emphasised the presence of a considerably high market power concentration in relation to the effects of the feedback loops created by the merger, and in connotation with the analysis of the economies of scale of the market data considered.

## **Conclusion**

The notion of market power represents the starting point of any competition assessment. During the years, competition theories have led to the development of tests for the evaluation of market power in the market economy.

Traditional tests such as the interchangeability test and SSNP tests have laid at the core of any market power assessment for many years and have been constantly applied by competition authorities around the globe.

Nevertheless, we have seen how the advent of complex market structures such as multi-sided platforms, the technological development of online markets and the impact of the Database Directive have called into question the adequacy of such means for the evaluation of market power in specific sectors of the modern big data economy.

This articles submits that, since markets are in constant evolution and new forms and structures develop across the years, so should market power tools; rather than remained anchored to formalistic and static paradigms, new means of assessment should be theorised in

view of providing a more adequate assessment of market power within the context of the new online economy.

With that end in mind, our journey into the big data markets has led to the theorisation of a new paradigm for the identification of market power in the big data sector. The new test attempts to embrace traditional concepts and economic theories and adapt them to this new sector of the economy.

Far from being a static paradigm, the new test is based on three specific permutations with the aim of providing a *tout court* approach to the assessment of market power of big data undertakings; these three steps see the necessity of evaluating in the first place the network effects of big data platform with specific reference to two feedback loops: the one related to the interaction between the platform and the number of users, based on the equation more users equal more data, which, by generating a service improvement in turn leads to attracting more users.

The second loop to be considered is the one arising from the interconnection between number of users and the possibility of monetisation through advertising. The presence of such feedback loops would denote an indicator of market power with the online platform considered potentially being in the position of exploit the data to the detriment of smaller competitors due to the possibility of targeting specific forms of advertising and generating ad revenues as a result.

The second phase of assessment of the proposed new test purports to consider the economies of scale in the data market analysed, with specific reference to the nature of the data and marginal benefits produced by the collection of large sets of data; the paradigm here is that high value non replicable data and the capacity of the undertaking concerned to process it would individually represent indicators a concentration of market power.

Finally, the third step of the prospected new paradigm would see the possibility to identify the data in question as an essential facility; under this scenario, the undertaking in possession of the data could be in the position to ringfence the market and create barriers to entry.

The fulfilment of one or more of the permutations characterising the aforementioned three phases of assessment would represent a relevant indicator of market power intensity under the new paradigm.

A retroactive application of the proposed test carried out in the above has arguably pointed out how the application of the new proposed paradigm could give rise to a more efficient evaluation of the market power in the big data sector, ultimately generating a more

dynamic and efficient procedure for the competition assessment of this ever so intricate and crucial side of the modern economy.