

Regulating Access to Big Data? – Between Ex-Ante and Ex-Post Economic Regulation

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Abstract

Big Data can be a monopolistic bottleneck that restricts access to downstream markets of companies that do not control the appropriate set of Big Data. This article examines both the drawbacks of competition law when applied to Big Data-driven markets as well as different possible forms of ex-ante economic regulation of access to Big Data, all with the aim of answering the research question: Is ex-post economic regulation alone insufficient to ensure access to competitively relevant Big Data, and if so, what type of ex-ante economic regulation would be most effective? In doing so it concludes that competition law is not a suitable primary tool for requesting access to Big Data for several reasons, in particular because competition law procedures are lengthy, market definition is difficult in the absence of a monetary price for the product, and markets driven by Big Data tend to be structurally inefficiently competitive. Asymmetrical ex-ante regulation is identified as the most appropriate form of regulating access to Big Data.

Keywords

Big Data; Mandated Access; Symmetric Regulation; Asymmetric Regulation; Self-Regulation.

Introduction, Structure of the Work and Methodology

Access to Big Data is becoming increasingly important in today's economic environment as it can provide a key competitive advantage,¹ with companies that have control over competitively relevant Big Data able to offer superior products.² Markets driven by Big Data have several features that limit the effectiveness of competition law, so that companies harmed

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¹ YUN, J.M. Antitrust After Big Data. *Criterion Journal on Innovation* [online] 2019, no. 04 [cit. 17. 5. 2023]. Available at: <https://www.criterioninnovation.com/articles/yun-antitrust-after-big-data.pdf>

² In this paper, the term “product” is used to refer to both products and services. However, it should be noted that most “products” in Big Data driven markets are in fact services. This distinction is not crucial for this paper and will therefore not be elaborated further.

Furthermore, it is important to note that this paper focuses exclusively on the area of market competition and thus omits the analysis of data protection concerns related to the collection, processing and sharing of Big Data. For more on that see: BUTTARELLI, G. Strange Bedfellows: Data Protection, Privacy and Competition Law. *Competition Law International*. London: International Bar Association, 2017, Vol. 13, no. 1, pp. 21–30. ISSN 1817-5708; BASEN, S. Competition, Privacy, and Big Data. *Catholic University Journal of Law and Technology*. Washington DC: Catholic University of America, Columbus School of Law, 2020, Vol. 28, no. 2, pp. 63–88. ISSN 1234-5678.

by abuses of market dominance connected with the control of Big Data have little possibilities for legal recourse. This could be particularly problematic if a company controlling competitively relevant Big Data abusively denies access to this data to an actual or potential competitor in the downstream market, thereby excluding him from the market. One possible solution would be the adoption of appropriate ex-ante economic regulation of access to economically relevant Big Data,³ which is currently being considered or implemented by several institutions, such as the European Commission (henceforth: Commission), the German Competition Authority and the British Competition and Markets Authority. This paper analyses the specificities of Big Data driven markets that limit the effectiveness of competition law, as well as the specificities of different possible types of ex-ante economic regulation of access to Big Data, with the aim of answering the research question: “Is ex-post economic regulation alone insufficient to ensure access to competitively relevant Big Data, and if so, what type of ex-ante economic regulation would be most appropriate?” This will contribute to the academic discourse by conducting a systematic analysis of the (non)effectiveness of competition law in Big Data driven markets and identifying the most appropriate form of economic ex-ante regulation of access to Big Data.

This paper is divided into 3 main parts. The first analyses whether competition law alone is suitable for the (ex-post) regulation of access to Big Data. In this sense, it first tries to distinguish Big Data from “normal” data. It then analyses why control of Big Data is an important and difficult to overcome barrier to entry, highlighting several features of Big Data driven markets (such as extreme economies of scale, strong direct and indirect network effects, the winner takes it all principle of functioning, and the snowball effect). In addition, this part of the paper explains why markets driven by Big Data tend to structurally lean towards inefficient competition. Finally, it explains why competition law alone is not an appropriate tool to address the above problems. It points to the problem that zero-price markets pose for the determination of relevant markets and the lack of effective and practical alternatives to the SSNIP test, the lengthy nature of competition law procedures that can render competition law tools ineffective, and the fact that competition law in general is not suited to address structural market failures that are widespread in markets driven by Big Data. Having thus established that due to the above reasons competition law is not a suitable tool to single-handedly safeguard competition on Big Data-driven markets, it can be concluded that some form of ex-ante economic regulation of access to Big Data is necessary. In this regards, the next section of the paper seeks to determine which model of such regulation is best suited for this task. Self-regulation is found to have several important drawbacks that limit its potential effectiveness in markets driven by Big Data, such as increased opportunities for regulatory capture and a lack of control by authorities over the regulatory rules thus established. Therefore, some form of regulation by public authorities is needed. The paper finds that symmetric ex-ante economic regulation is not appropriate for regulating access to Big Data, as it would reduce the incentives for smaller companies to invest in innovations or even exclude them from markets, which would only lead to further concentration of already concentrated markets. Based on practical and

³ For better comprehensibility of the text, the term “Big Data” is used in the following to describe economically relevant Big Data.

theoretical findings, asymmetric economic ex-ante regulation is identified as the best possible model for ex-ante economic regulation of access to Big Data. The possibility of progressive regulation of access to Big Data is also discussed. The third and final part summarises the main findings of the paper and thus answers the research question.

The central research methods on which this paper is based are the normative-dogmatic method, which is used to analyze the established system as it is (*de lege lata*), and the axiological method, which is used to identify its drawbacks and find the best form of ex-ante economic regulation of access to Big Data – in other words, the optimal form as it should be (*de lege ferenda*). The comparative method is used on a smaller scale to compare solutions at the EU level with those of the German legislator.⁴ Within the three core research methods mentioned above, several instrumental methods are also used, namely the method of collecting and analysing information and discarding irrelevant information, the methods of description, abstraction and classification, logical and analytical reasoning, and the methods of deduction and induction.⁵

1 Should Access to Big Data be Subject to Ex-ante Economic Regulation?

Ex-ante economic regulation (in case at hand, regulation of access to Big Data) represents an intensive intervention of the public authorities in the market and should therefore only be applied as *ultima ratio* in a market economy. Although it is not possible to define *in abstracto* in which situations it is warranted, it is the Commission's position that ex-ante economic regulation is appropriate in markets where there are high and non-transitory barriers to entry, where the market structure is leaning towards inefficient competition and competition law (ex-post regulation) is not sufficient to safeguard effective market competition.⁶ This paper finds that all three of the above conditions are met by markets driven by Big Data and that some form of ex-ante economic regulation of access to Big Data is therefore required.

1.1 What are Big Data

Although Big Data has been called the most valuable commodity of our time, with an estimated 180 zettabytes (**10²¹**) of data to be created by 2025,⁷ there is not yet a universally

⁴ The solutions from the German legal system were chosen due to their innovative nature, as will be explained below.

⁵ The methodology follows the methodological guidelines as presented, inter alia, by: KERSCHNER, F. *Wissenschaftliche Arbeitstechnik und Methodenlehre für Juristen*. Vienna: Wirtschaftsuniversität Wien, 2016. ISBN 978-3708910598; SCHLEUP, W. *Einladung zur Rechtslehre*. Baden-Baden: Nomos, 2006. ISBN 978-3-8329-2493-5.

⁶ See Commission Recommendation of 9 October 2014 on relevant product and service markets within the electronic communications sector susceptible to ex-ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services (2014/710/EU). Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32014H0710> [cit. 15. 5. 2023].

⁷ BAILEY, D. Competition Policy in the Digital Era. *Concurrences* [online]. 2018, no. 01 [cit. 2. 4. 2023]. Available at: <https://www.concurrences.com/en/review/issues/no-1-2018/editorial/editorial-85712>

accepted definition of Big Data, which depends heavily on the discipline. However, this paper adopts the Commission's definition of Big Data as "large amounts of different types of data produced with high velocity from a high number of various types of sources, whose handling requires new tools and methods, such as powerful processors, software and algorithms."⁸ The main characteristics of Big Data that distinguish it from "normal" data are the enormous volume and variety of data that Big Data contains and the high speed at which new data is collected and processed. In addition, it is important to distinguish between "Big Data" and "sets of Big Data." Both terms refer to large amounts of data. However, a set of Big Data is a subset of the larger universe of Big Data because it is created for a specific purpose. A set of Big Data is therefore smaller and more targeted than Big Data.⁹

1.2 Big Data as a Barrier to Entry

One company's control of a set of Big Data can be a significant barrier to entry for other companies,¹⁰ as the control and processing of Big Data involves extremely high (prohibitive) start-up costs required to set up the necessary facilities (e.g., purchasing expensive hardware (servers and storage), developing appropriate software to collect and process Big Data, hiring skilled engineers, etc.). However, once the facilities to collect and process Big Data are established, the economies of scale are almost infinite, making Big Data driven markets very different from traditional markets where economies of scale become negative beyond a certain point, a phenomenon known as diseconomies of scale. This means that the economic efficiency of collecting and processing data increases linearly or sometimes even exponentially,¹¹ with average costs decreasing *ad infinitum*.¹² For example, companies that

⁸ Communication from the Commission – Towards a thriving data-driven economy (SWD(2014) 214 final). Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52014DC0442> [cit. 13. 5. 2023].

⁹ For example, a huge dataset that contains all online purchase transactions worldwide for a given year is called Big Data because of its size and complexity. If we want to analyze the shopping habits of a specific population, such as "online purchases by teenagers in a given country," we would create a (sub)set of the Big Data. This set would be smaller and more targeted than the entire global online shopping dataset.

¹⁰ There are two different schools regarding barriers to entry, the structuralist school and the Chicago school, with this paper following the first, which defines barriers to entry as any advantage that firms already established in the market have over potential new entrants. The Chicago school, on the other hand, considers barriers to entry only being price asymmetries between the already established firms and the new entrants, i.e. as costs borne by the new entrants but not by the established firms. For more see: BAIN, J.S. *Barriers to New Competition, their Character and Consequences in Manufacturing Industries*. Cambridge: Harvard University Press, 1957. ISBN 978-0674062009. DOI: <https://doi.org/10.4159/harvard.9780674188037>; ARSLAN, B. *Crying 'Big' Bad Wolf? An Economic Analysis of Big Data as a Competition Concern*. *College of Europe dissertation* [online]. 2016, 48 p. [cit. 23. 4. 2023]. Available at: [https://doi.org/10.1257/0002828041302235](https://coleurope.on.worldcat.org/search/detail/953024892?queryString=%22big%20bad%20wolf%22; McAFEE, P., MIALON, H. M., WILLIAMS, M. A. What is a Barrier to Entry. <i>American Economic Association Papers and Proceedings</i>. Nashville: American Economic Association, 2004, Vol. 94, no. 2, pp. 461–465. ISSN 2574-0768. DOI: <a href=)

¹¹ O, C. *Le digital markets act: Un nouveau chapitre dans l'histoire du droit de la concurrence*. *Esprit*. Paris: Editions esprit, 2021, no. 3, pp. 125–138, 132 p. ISSN 0014-0759. DOI: <https://doi.org/10.3917/espri.2015.0125>

¹² This is of course not the case in traditional markets, where average costs only fall to a certain point and then rise again.

already have capabilities to collect and process consumers' personal data can improve their products according to those preferences. Actual or potential competitors who do not have the necessary data cannot offer comparable products and are thus excluded from entering the market in question.¹³

Moreover, there are usually strong direct and indirect network effects (also network externalities) associated with the control of Big Data.¹⁴ This was recognised by the Commission in its Facebook/WhatsApp decision, in which it stated that although network effects do not *per se* indicate market failures and an anti-competitive market structure, this may nevertheless be the case, especially if the companies controlling the network make it impossible or difficult for their competitors to expand their customer base.¹⁵ An example of direct network effects in markets driven by Big Data would be the increase in value of a social network for an individual user with the increase in the total number of its users, as it allows them to connect with more friends and family and make new connections.¹⁶ The larger the number of users of a social network, the more complementary functions (usually different apps) are offered by the developers (indirect network effects).¹⁷ The marginal value of additional quantities of data for companies decreases with the increase of the overall quantity of data they control. The strength of the network effects depends on the point when the marginal value begins falling; the earlier this happens, the weaker the network effects and *vice versa*.¹⁸ In the Microsoft case, the Commission found that indirect network effect established an applicational barrier to entry, as the launch of a new operating system was not possible if there were not enough compatible applications on the market.¹⁹ On the other hand, however, it found in Microsoft/Skype that network effects do not constitute a barrier

¹³ The phenomenon described above is called “informational barriers to entry.”

For more information see BUTTS, C. The Microsoft Case 10 Years Later: Antitrust and New Leaning “New Economy” Firms. *Northwestern Journal of Technology and Intellectual Property*. Chicago: Northwestern Pritzker School of Law, 2010, Vol. 8, no. 2, pp. 275–291, pp. 290, 291. ISSN 1549-8271.

¹⁴ Direct network effects represent the increase in value of using the network for a customer with the increase in the total number of users, while indirect network effects represent the increase in quantity and quality of complementary products with the increase in the number of users of the network. For more see: KOLASKY, W.J. Network Effects: a Contrarian View. *George Mason Law Review*. Arlington: Antonin Scalia Law School, 1999, Vol. 7, no. 3, pp. 577–616, 579 p. ISSN 1068-3801; LEMLEY, M. A., MCGOWAN, D. Legal Implications of Network Economic Effects. *California Law Review*. Berkeley: UC Berkeley School of Law, 1998, Vol. 86, no. 3, pp. 479–612, p. 481. ISSN 0008-1221. DOI: <https://doi.org/10.2307/3481119>

¹⁵ Decision of the European Commission. *European Commission* [online]. 3. 10. 2014, M.7217 [cit. 20. 5. 2023]. Available at: https://ec.europa.eu/competition/mergers/cases/decisions/m7217_20141003_20310_3962132_EN.pdf

¹⁶ The Bundeskartellamt found that the exclusion of consumers from using the social network Facebook can be equated with their exclusion from using social networks in general, as there are no actual or potential substitutes for Facebook due to extreme direct network effects. See Decision of the Bundeskartellamt. *Bundeskartellamt* [online]. 15. 2. 2019, B6-22/16 [cit. 18. 5. 2023]. Available at: http://www.bundeskartellamt.de/SharedDocs/Entscheidung/EN/Entscheidungen/Missbrauchsaufsicht/2019/B6-22-16.pdf?%3F__blob%3DpublicationFile%26v%3D5

¹⁷ See: WALLER, S.W. Antitrust and Social Networking. *North Carolina Law Review*. Chapel Hill: University of North Carolina School of Law, 2012, Vol. 90, no. 5, pp. 1771–1806, pp. 1787, 1788. ISSN 0029-2524.

¹⁸ See: GRAEF, I. *Data as Essential Facility*. Tilburg: University of Tilburg, 2016, 47 p.

¹⁹ Decision of the European Commission. *European Commission* [online]. 16. 12. 2009, AT.39530 [cit. 22. 5. 2023]. Available at: https://ec.europa.eu/competition/antitrust/cases/dec_docs/39530/39530_3162_3.pdf

to entry for internet-based communications services, as consumers switch regularly and switching costs are low.²⁰ Similarly, in its *Cisco* judgement, the Court²¹ found that communication applications, especially those offered free of charge, can be downloaded and installed quickly from the internet and that therefore there are neither technical nor economic barriers to entry in such cases.²² According to the Commission and the Court, network effects therefore do not constitute barriers to entry if multihoming is possible without technical and/or economic restrictions. Where this is not the case, in particular where the applications in question are pre-installed on the relevant hardware, network effects can (and do) constitute significant barriers to entry.

In my opinion, Big Data-driven markets are not absolutely dynamic and subject to creative destruction by “computer programmers in their garages,” as most digital giants have achieved their success by erecting and maintaining high (effectively insurmountable) barriers to entry.²³ Developing the capabilities to do business in these markets, i.e. the facilities needed to collect and process Big Data, involves huge (prohibitive) investments (start-up costs).²⁴ Moreover, the cost of switching the product offered in Big Data driven markets can be significant, tying consumers to the product they already use.²⁵ All in all, it can be concluded that control over Big Data is indeed an important barrier to entry in Big Data driven markets.

1.3 Markets Driven by Big Data are Structurally Prone to Inefficient Competition

Big Data can represent a monopolistic bottleneck. A monopolistic bottleneck is usually infrastructure that is indispensable for operating in the downstream market and

²⁰ Decision of the European Commission. *European Commission* [online]. 7. 10. 2011, M.6281 [cit. 21. 5. 2023]. Available at: https://ec.europa.eu/competition/mergers/cases/decisions/m6281_924_2.pdf

²¹ The term Court is used as a generic term for both the Court of Justice and the General Court, unless explicitly stated otherwise.

²² Judgement of the General Court (Fourth Chamber) of 11. 12. 2023, *Cisco Systems and Messagenet v Commission*, case T-79/12, para. 79.

²³ See: NEWMAN, J. M. Antitrust in Digital Markets. *Vanderbilt Law Review*. Nashville: Vanderbilt University, 2019, Vol. 72, no. 5, pp. 1497–1562, 1512 p. ISSN 0042-2533.

²⁴ In this regard see: Decision of the European Commission. *European Commission* [online]. 18. 2. 2010, M.5727 [cit. 29. 4. 2023]. Available at: https://ec.europa.eu/competition/mergers/cases/decisions/M5727_20100218_20310_261202_EN.pdf, para. 111 stating that: “Barriers to entry into this market appear to be high and include, among others, hardware, cost of indexing the web, human capital, cost of developing and updating the algorithm and IP patents. Microsoft estimates that the capital expenditure required to 18 enter the market is approximately USD 1 000 million in hardware and USD 1 000 million in human capital. On top of that, Microsoft estimates that a new entrant would have to spend several billions of dollars to develop and update the algorithm. Finally, Microsoft explains that there are very significant costs that a new entrant would have to bear related to the necessity to have a large database.”

²⁵ Switching costs are costs (monetary or non-monetary) that the consumer has to bear for changing the product used so far. The higher the switching costs, the stronger the lock-in effect. It should be noted that switching costs can be significant even for “free” products, such as internet browsers, because the consumer does not know the functionalities of the new product and therefore has to relearn them. Moreover, the new product is not as personalised as the old one and is therefore less useful.

is in the exclusive control of one or more companies that can deny their competitors access to it.²⁶ Monopolistic bottlenecks are therefore usually subject to ex-ante economic regulation of access. The existence of a monopolistic bottleneck is a typical indication that the market in question is inherently (structurally) prone to inefficient competition.²⁷ Most of the world's data is controlled by a small number of powerful companies²⁸ that are typically vertically integrated and therefore present both in the upstream market where they collect data (which together constitute Big Data) and in one or more downstream markets for activities on which the data collected in the upstream market is an essential input (essential facility). This means that activity in the downstream market is not possible without access to the data collected in the upstream market. Companies that are already active in the upstream market (or even have a dominant position there) can thus transfer their (dominant) position from the upstream to the downstream market, while companies that are not present in the upstream market and want to enter the downstream market must obtain access to the necessary Big Data from the companies that control it. The latter are naturally reluctant to grant such access, because if they are already active in the downstream market, this would mean granting access to a competitor who would otherwise be excluded from that market. If, on the other hand, they are not yet present on the downstream market, they could refuse access to the Big Data in question in order to exclude competitors from the market as a precaution, should they decide to enter this market themselves at some point in the future. In summary, markets driven by Big Data are indeed structurally prone to inefficient competition.

1.4 Competition Law is not Sufficient to Deal with Markets Driven by Big Data

The Commission itself noted that “*competition law interventions are likely to be insufficient where, for instance, the compliance requirements of an intervention to address persistent market failure(s) are extensive or where frequent and/or timely intervention is indispensable and that thus, ex-ante regulation should be considered an appropriate complement to competition Law when competition law alone would not adequately address persistent market failure(s) identified.*”²⁹ Markets driven by Big Data are plagued by several market failures (high barriers to entry, strong network effects, consumer lock-in effect, snowball effect, strong economies of scale, etc.) that require frequent and timely

²⁶ It should be noted that regulated access to the monopolistic bottleneck will increase competition not in the upstream market (the market of the monopolistic bottleneck) but in the downstream market.

²⁷ For more on monopolistic bottlenecks see KNIIEPS, G. The Three Criteria Test, the Essential Facilities Doctrine, and the Theory of Monopolistic Bottlenecks. *University of Freiburg Discussion Paper* [online]. 2011, no, 132 [cit. 23. 5. 2023]. Available at: <https://ideas.repec.org/p/zbw/aluivr/132.html>

²⁸ The so called MAAMA companies, the letter being an acronym for Microsoft, Apple, Alphabet, Meta, and Amazon.

²⁹ See Commission Recommendation of 9 October 2014 on relevant product and service markets within the electronic communications sector susceptible to ex-ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services (2014/710/EU).

intervention.³⁰ In addition, both the Commission and the Court take a very price-oriented approach in competition law proceedings,³¹ especially with regard to abuses of market dominance. This can lead to difficulties when the product in question has no monetary price. Such situations are not common in traditional markets –but they are in markets driven by Big Data, where the “zero-price market”³² phenomenon is common.

The absence of a traditional, monetary price for products in zero-price markets creates difficulties because the SSNIP test (small but significant and non-transitory increase in price)³³ is not applicable.³⁴ The latter test is of great importance in abuse of dominance proceedings as it serves to define the relevant product market in a uniform manner, as opposed to an *ad hoc* determination based on product similarity. Accordingly, the relevant market is defined as the “*narrowest range of products such that a hypothetical monopolist in the relevant product area would find it both possible and worthwhile to institute a SSNIP.*”³⁵ If consumers were to migrate to other products (demand substitution), making an SSNIP unprofitable, the substitutes would also be included in the relevant market. Relevant markets can also be defined without

³⁰ The above peculiarities of Big Data-driven markets also apply to markets in the infrastructure sectors, which are traditionally subject to economic ex-ante access regulation. However, it should be noted that they are only more pronounced in Big Data driven markets.

Moreover, Big Data have all the essential characteristics of infrastructure. As such, they are an essential input for the offering of countless (as yet unidentified) different products in countless different (as yet unidentified) downstream markets; the establishment of facilities for their collection and processing involves high (prohibitive) start-up costs; the bulk of the world’s data is controlled by several large companies; they are generally non-rivalrous in nature, although one company can exclude its competitors from using the data it controls; the company that controls a set of Big Data enjoys extreme economies of scale. A more detailed overview of why Big Data should be considered as infrastructure can be found in: VEZZOSO, S. Happy Families are Alike: The EDPS Bridges Between Competition and Privacy. *Market and Competition Law Review*. Lisbon: Universidade Católica Editora, 2019, Vol. 4, no. 1, pp. 41–68, 45 p. ISSN 2184-0008; SCHOLZ, L. H. Big Data is not Big Oil: the Role of Analogy in Law of New Technologies. *Tennessee Law Review*. Knoxville: University of Tennessee College of Law, 2019, Vol. 86, no. 4, pp. 863–894, 884 p. ISSN 0040-3288.

³¹ See: PORTUESE, A. Precautionary Antitrust: The Changing Nature of Competition Law. *Journal of Law, Economics, and Policy*. Arlington: Antonin Scalia Law School, 2022, Vol. 17, no. 3, pp. 548–634, 632 p. ISSN 1553-4367; EZRACHI, A, MODRALL, J. Rising to the Challenge – Competition Law and the Digital Economy. *Competition Law International*. London. International Bar Association, 2019, Vol. 15, no. 2, pp. 117–126. ISSN 1817-5708; WASASTJERNA, M. European Union Competitive Policy for the Twenty-First Century Digital Economy, *Columbia Journal of European Law*. New York: University of Columbia School of Law, 2018, Vol. 24, no. 3, pp. 527–540, 528 p, 538 p. ISSN 1076-6715.

³² For more information on the specifics of zero-price markets, see: NEWMAN, J. M. Antitrust in Zero-Price Markets: Applications. *Washington University Law Review*. St. Louis: Washington University School of Law, 2016, Vol. 94, no. 1, pp. 49–112. ISSN 2166-7993; NEWMAN, J. M. Antitrust in Zero-Price Markets: Foundations. *University of Pennsylvania Law Review*. Philadelphia: Penn Carey Law, 2015, Vol. 164, no. 1, pp. 149–206. ISSN 0041-9907.

³³ This test involves hypothetically increasing the price of a product or service by a small amount, but non-transitorily, and then assessing whether enough customers would stay with the company to make the price increase worthwhile for the company. If a sufficient number of customers continue to buy the product or service after the price increase, this indicates that a given product or service should be included on a relevant market.

³⁴ As an SSNIP increase (5–10%) of the price of zero is still zero.

³⁵ CRAIG, P, BURCA, G. de. *EU Law*. 6. ed. Oxford: Oxford University Press, 2015, 1061 p. ISBN 978-0198714927.

applying the SSNIP test, i.e. on the basis of qualitative criteria.³⁶ In fact, quantitative analysis is often combined with qualitative analysis, depending on the amount of information available.³⁷ The shift from a quantitative to a qualitative approach is clearly observable in the recent decision-making practise of the Commission and the Court in the context of zero-price markets, where the SSNIP test has been completely omitted.³⁸ A qualitative approach can lead to satisfactory results, although in my opinion, if appropriate tools are available, entirely *ad hoc* market determination should be avoided.

There have been several theoretical attempts to transform the SSNIP test so that it is applicable to zero-price markets. The most widely discussed is the SSNDQ (small but significant and non-transitory decrease in quality) test, which attempts to measure the impact of a decrease in the quality of a given product on consumer choice,³⁹ equating a decrease in quality with an increase in price and *vice versa*. For the SSNDQ test to be practically applicable, quality would need to be quantified, with both a baseline level of quality established and the increase or decrease in quality measurable. This would be possible in disciplines where quantitative metrics for quality measurement are an established discipline, such as hospital quality assessment,⁴⁰ but would prove difficult in other areas. In addition, for multi-sided internet platforms, an important quality parameter is the level of protection of users' personal data. However, not all users value the protection of their personal data equally. Since the increased collection and processing of personal data is usually associated with a more personalised product, lowering the level of data protection could increase the quality of the products for some consumers.⁴¹ Another theoretically discussed possibility is the SSNIC (small but significant and non-transitory increase in cost) test, which attempts to measure

³⁶ See Judgement of the Court of 14. 2. 1978, *United Brands vs. Commission*, case C-27/76.

³⁷ MANDRESCU, D. The SSNIP Test and Zero-Pricing Strategies. *European Competition and Regulatory Law Review*. Berlin: Lexxion Verlagsgesellschaft GmbH, 2018, Vol. 2, no. 4, pp. 244–257. ISSN 2510-3148. DOI: <https://doi.org/10.21552/core/2018/4/4>

³⁸ Decision of the European Commission. *European Commission* [online]. 3. 10. 2014, M.7217 [cit. 20. 5. 2023]. Available at: https://ec.europa.eu/competition/mergers/cases/decisions/m7217_20141003_20310_3962132_EN.pdf; Decision of the European Commission. *European Commission* [online]. 6. 12. 2016, M. 8124 [cit. 21. 5. 2023]. Available at: https://ec.europa.eu/competition/mergers/cases/decisions/m8124_1349_5.pdf; Decision of the European Commission. *European Commission* [online]. 27. 6. 2017, AT.39740 [cit. 21. 5. 2023]. Available at: https://ec.europa.eu/competition/antitrust/cases/dec_docs/39740/39740_14996_3.pdf; Judgement of the General Court (Ninth Chamber) of 10. 10. 2021, *Google and Alphabet vs. Commission (Google Shopping)*, case T-612/17.

Also see MANDRESCU, D. The SSNIP Test and Zero-Pricing Strategies. *European Competition and Regulatory Law Review*. Berlin: Lexxion Verlagsgesellschaft GmbH, 2018, Vol. 2, no. 4, pp. 244–257. ISSN 2510-3148.

³⁹ See: WASASTJERNA, M. *Competition, Data and Privacy in the Digital Economy: Towards a Privacy Dimension in Competition Policy*. Alpen aan den Rijn: Kluwer Law International, 2020, 128 p. ISBN 978-9403522203; OECD. The Role and Measurement of Quality in Competition Analysis. *OECD* [online]. 2013 [cit. 28. 4. 2023]. Available at: <https://www.oecd.org/competition/Quality-in-competition-analysis-2013.pdf>

⁴⁰ EZRACHI, A., STUCKE, M.E. *Virtual Competition: the Promise and Perils of the Algorithm-Driven Economy*. Cambridge: Harvard University Press, 2016, 2 p. ISBN 978-0674545472. DOI: <https://doi.org/10.4159/9780674973336>

⁴¹ AKERLOF, G. Markets for Lemons: Quality, Uncertainty and the Market Mechanism. *Quarterly Journal of Economics*. Oxford: Oxford University Press, 1980, Vol. 84, no. 3, pp. 488–500. ISSN 0033-5533. DOI: <https://doi.org/10.2307/1879431>

the information and attention costs associated with using a product in a zero-price market, where information costs are the amount of (personal) information the consumer must provide to use the free product and attention costs are the user's exposure to advertising while using the product.⁴² The concept of information and attention costs is unclear and difficult to quantify, as they can take different forms. In addition, both information and attention costs can increase due to product improvements that lead to more personalised services⁴³ and more relevant advertisements.⁴⁴ Thus, increases in information and attention costs do not always lead to a reduction in consumer welfare in the same way as an increase in prices. Therefore, both the SSNDQ and the SSNIC test, while theoretically sound, are extraordinarily difficult to operationalise. Given the inapplicability of the SSNIP test to zero price markets and the difficulties in operationalising the SSNDQ and the SSNIC test, there is no systematic tool to define relevant zero-price markets. Therefore, they have to be defined on the basis of a qualitative *ad hoc* assessment, which may lead to inconsistent market determination.

Moreover, competition law procedures, especially complicated ones, are very lengthy. An example of this is the Google Search (Shopping) saga, which started with the Commission opening an investigation into Google's alleged abuse of its market dominance on 30 November 2010.⁴⁵ The subsequent proceedings lasted almost seven years until the Commission fined Google on 27 July 2017.⁴⁶ On Google's appeal, the General Court issued a judgement on 10 November 2021, with the Court of Justice still deliberating on Google's appeal. When it comes to abuse of a dominant position in markets driven by Big Data, such a duration of proceedings may prove particularly problematic due to several specific features of such markets,⁴⁷ in particular their dynamic nature due to the fast pace of innovation,⁴⁸ first mover advantage⁴⁹ and the consequent rapid consolidation of established market positions. Therefore, even if a competition law proceeding ends unfavorably for a company controlling a set of Big Data, it is possible or even likely that it will

⁴² NEWMAN, J.M. Antitrust in Zero-Price Markets: Foundations. *University of Pennsylvania Law Review*. Philadelphia: Penn Carey Law, 2015, Vol. 164, no. 1, pp. 149–206. ISSN 0041-9907.

⁴³ GUGGENBERGER, N. Essential Platforms. *Stanford Technology Law Review*. Stanford: University of Stanford School of Law, 2021, Vol. 24, no. 2, pp. 237–343. ISSN 10984267.

⁴⁴ MANDRESCU, D. The SSNIP Test and Zero-Pricing Strategies. *European Competition and Regulatory Law Review*. Berlin: Lexxion Verlagsgesellschaft GmbH, 2018, Vol. 2, no. 4, pp. 244–257, 250 p. ISSN 2510-3148.

⁴⁵ Antitrust: Commission probes allegations of antitrust violations by Google. *European Commission* [online]. 30. 11. 2010 [cit. 20. 4. 2023]. Available at: https://ec.europa.eu/commission/presscorner/detail/en/IP_10_1624

⁴⁶ Antitrust: Commission fines Google €2.42 billion for abusing dominance as search engine by giving illegal advantage to own comparison shopping service – Factsheet. *European Commission* [online]. 27. 6. 2017 [cit. 24. 5. 2023]. Available at: https://ec.europa.eu/commission/presscorner/detail/en/MEMO_17_1785

⁴⁷ For more on them see GRAEF, I. Rethinking the Essential Facilities Doctrine for the EU Digital Economy. *Revue juridique themis*. Montréal: Éditions Thémis, 2019, Vol. 53, no. 1, pp. 33–72, pp. 54–55. ISSN 0556-7963.

⁴⁸ See: CALVANO, E., POLO, M. Market Power, Competition and Innovation in Digital Markets: A Survey. *SSRN Working Paper* [online]. 2019 [cit. 22. 4. 2023]. DOI: <https://doi.org/10.2139/ssrn.3523611>

⁴⁹ For more on first mover advantage see KOPEL, M., LÖFFLER, C. Commitment, first-mover-, and second-mover advantage. *Journal of Economics*. Oxford: Oxford University Press, 2008, Vol. 94, no. 2, pp. 143–166. ISSN 0931-8658. DOI: <https://doi.org/10.1007/s00712-008-0004-4>

consolidate its market position in the course of the proceeding to such an extent that competition law remedies such as fines or an access obligation will not be sufficient to establish competition in the market. Moreover, by the end of the procedure, the product that the applicant company intends to offer will be (technically) obsolete and thus uninteresting to consumers. Finally, it should not be forgotten that competition law, as ex-post economic regulation, aims at sanctioning infringements already committed and thus does not target structural market failures. Consequently, ex-ante economic regulation stimulates competition in the market where it would otherwise be absent, while competition law protects the competition thus artificially established.⁵⁰

It is not unreasonable to assume that in the case of claims for access to Big Data, the claimant company would probably demand continuous or at least intermittent access and not just one-off access. In such cases, competition law lacks instruments to control the enforcement of a decision. Thus, if the company controlling the set of Big Data that has been ordered to be shared would no longer grant continuous or intermittent access, the requesting company would have to file a new application and the procedure would be repeated. Moreover, in cases where the market in question is not yet mature and the rules of the game are not yet fully established, which is the case with Big Data driven markets, the intervention of competition law may reduce the incentives for companies to invest in innovation.⁵¹

Even if competition law can be used to achieve the goals of ex-ante economic regulation – the ENI case⁵² is a prime example – this should not be the case.⁵³ Given that Big Data driven markets are fraught with several important structural flaws, competition law is not sufficient to enable requesting companies access Big Data, for the reasons outlined above. It should therefore be used as a background regime together with, rather than as an alternative to, ex-ante economic regulation.

2 Which Model of Ex-ante Economic Regulation is Best Suited for Access to Big Data

Having established that competition law alone cannot be used as the primary tool in Big Data access cases, the next step is to analyse which model of ex-ante economic regulation is best suited for regulating access to Big Data.

⁵⁰ IBÁÑEZ COLOMO, P. *EU Competition Law in the Regulated Network Industries*. In: GALLOWAY, J. (ed.). *Intersections of Antitrust: Policy and Regulation*. Oxford: Oxford University Press, 2016. ISBN 978-1108841870. DOI: <https://doi.org/10.2139/ssrn.2747785>

⁵¹ GRAEF, I. *Data as Essential Facility*. Tilburg: University of Tilburg, 2016, 47 p.

⁵² Decision of the European Commission. *European Commission* [online]. 29. 9. 2010, COMP/39.315 [cit. 15. 5. 2023]. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52010XC1223%2801%29>

⁵³ See: MAIER-RIGAUD, F., MANCA, F., KOPPENFELS, U. von. Strategic Underinvestment and Gas Network Foreclosure – the ENI Case. *EC Competition Policy Newsletter* [online]. 2011, Vol. 1, pp. 18–23 [cit. 11. 5. 2023]. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1903788; MERLINO, P., FAELLA, G. Strategic Underinvestment as an Abuse of Dominance Under EU Competition Rules. *World Competition*. Alpen aan den Rijn: Kluwer Law Online, 2013, Vol. 36, no. 4, pp. 513–539, pp. 519–525. ISSN 1875-8436. DOI: <https://doi.org/10.54648/WOCO2013040>

2.1 On the concept of ex-ante economic regulation

Although there are several definitions of ex-ante economic regulation, it is understood as the ex-ante regulation of relations between private persons (including, of course, companies) by public authorities in the field of market competition in this paper.⁵⁴ Ex-ante regulation can be economic or social in nature. Economic ex-ante regulation is primarily directly related to the market and is particularly justified in cases of market failure, while social ex-ante regulation serves to protect various aspects of the public interest (public health, environment, social cohesion, etc.). Social ex-ante regulation does not pursue economic objectives, but can sometimes have a significant economic impact.⁵⁵ This paper deals exclusively with ex-ante economic regulation as it centers around market competition. It must, however, be pointed out that Big Data-driven markets also pose novel challenges for different aspects of the public interest, which should be addressed primarily via ex-ante social regulation.

2.2 Self-regulation of Access to Big Data

Self-regulation is the voluntary regulation of one's own activities by market participants and is usually carried out by collective self-regulatory associations. Compared to regulation by public authorities, self-regulation has both advantages and disadvantages. Some of the most commonly highlighted advantages are that self-regulation is cheaper and more flexible compared to regulation by public authorities and that self-regulation leads to a higher level of voluntary compliance.⁵⁶ In addition, the markets driven by Big Data are extremely dynamic and susceptible to rapid change, so that new business models are constantly being established in them.⁵⁷ Since the markets in question are not yet mature and the authorities consequently have insufficient knowledge about the principles of their functioning, the risk of regulatory failure is extremely high. Schawe argues that the best course of action is therefore to empower market actors to establish the relevant rules themselves.⁵⁸

⁵⁴ On the various definitions of ex-ante regulation see: MOOSA, I. A. Good Regulation v Bad Regulation. *Journal of Banking Regulation*. London: Palgrave Macmillan Ltd., 2018, Vol. 19, no. 1, pp. 55–63. ISSN 1745-6452. DOI: <https://doi.org/10.1057/s41261-017-0055-y>; ORBACH, B. What is Regulation. *Yale Journal of Regulation*. New Haven: Yale University School of Law, 2012, Vol. 30, pp. 1–10. ISSN 2376-5925.

⁵⁵ VELJANOVSKI, C. Economic Approaches to Regulation. In: BALDWIN, R., CAVE, M., LODGE, M. (eds.). *The Oxford Handbook of Regulation*. Oxford, Oxford University Press, 2010. ISBN 978-0199655885. DOI: <https://doi.org/10.1093/oxfordhb/9780199560219.003.0002>

⁵⁶ Industry Self Regulation: Role and Use in Supporting Consumer Interests. *OECD* [online]. 1. 3. 2015 [cit. 10. 5. 2023]. Available at: https://www.oecd-ilibrary.org/science-and-technology/industry-self-regulation_5js4k1fjqkwh-en

⁵⁷ VILLAFRANCO, J. Self-Regulation in the Big Data and AI Space. *Judge's Journal*. Washington DC: American Bar Association, 2020, Vol. 59, no. 1, pp. 32–35. ISSN 0047-2972.

⁵⁸ SCHAWA, N. It's all About Data: Time for a Data Access Regime for the Sharing Economy? *Information Policy*. Amsterdam: IOS Press, 2020, Vol. 25, no. 2, pp. 177–195, p. 186. ISSN 1570-1255. DOI: <https://doi.org/10.3233/IP-190206>

At the same time, however, self-regulation has several disadvantages, such as the increased possibility of regulatory capture⁵⁹ and the lack of oversight and control by public authorities,⁶⁰ which makes it particularly unsuitable for regulating access to Big Data. The companies that control most of the world's data are also the most financially powerful companies in the world. It is clearly not in their interest to create regulatory regimes that allow other companies broad access⁶¹ to data that they themselves control, as this would allow new competitors to establish themselves in markets where they are already present or could be present. As Big Data shares several key characteristics with infrastructure, access to them is not only in the commercial interest of the companies actually or potentially active in the (actual or potential) downstream markets, but also in the interest of society as a whole, as it can open up entirely new markets and thus contribute to economic prosperity. Two important documents regulating access to certain categories of data, namely the Directive on Open Data and the Re-use of Public Sector Information⁶² and the Electricity Directive,⁶³ treat data as infrastructure in that it is an essential input for the offering of innovative services on countless (as yet unknown) downstream markets, with the accessing parties themselves tasked with determining its economic relevance.⁶⁴

Self-regulation has already proven to be an inadequate tool for regulating markets where the interests of financially strong companies conflict with the public interest. A prime example is the self-regulation of the financial services industry before the collapse of the financial markets in 2007/2008, where the lack of sufficient global (or even regional) regulation by the authorities led market participants to self-regulate their activities. The self-regulatory rules adopted in this way did not include sufficiently stringent provisions on the quality of equity, gross leverage ratios, counter-cyclical capital buffers, etc. that could have mitigated (or prevented altogether) the effects of the crisis,⁶⁵ as such measures would have reduced companies' profit margins. Furthermore, if the few powerful companies that control most

⁵⁹ For more information on regulatory capture see CAPRIO, G. *Regulatory Capture: Why it Occurs, How to Minimize it*. North Carolina Banking Institute. Chapel Hill: University of North Carolina School of Law, 2013, Vol. 18, no. 1, pp. 39–50.

⁶⁰ EDWARDS, B. P. *The Dark Side of Self-Regulation*. *University of Cincinnati Law Review*. Cincinnati: University of Cincinnati College of Law, 2017, Vol. 85, no. 3, pp. 573–622, p. 606. ISSN 0009-6881.

⁶¹ The proposal of the new Data Act also contains wide-ranging access obligation in regard to data. This, however, cannot be classified as self-regulation.

⁶² Directive (EU) 2019/1024 of the European Parliament and of the Council of 20 June 2019 on open data and the re-use of public sector information. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019L1024> [cit. 12. 5. 2023].

⁶³ Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32019L0944> [cit. 17. 5. 2023].

⁶⁴ DUCUING, C. *Data as Infrastructure? A Study of Data Sharing Legal Regimes. Competition and Regulation in Network Industries*. Newbury Park: SAGE Publications Inc, 2020, Vol. 21, no. 2, pp. 124–142, p. 126. ISSN 1783-5917. DOI: <https://doi.org/10.1177/1783591719895390>

⁶⁵ For more information on the lack of the self-regulatory rules in the financial services industry see ROUCH, D. *Self-Regulation is Dead: Long Live Self-Regulation*. *Law and Financial Markets Review*. Abingdon-on-Thames: Taylor and Francis, 2010, Vol. 4, no. 2, pp. 102–122. ISSN 1752-1459. DOI: <https://doi.org/10.1080/17521440.2010.11428106>

of the world's data were represented in self-regulatory organisations that set the rules for access to that data, there would be a clear risk of regulatory capture, as it is likely that said companies would use their economic and political power to influence the rule-making process to set rules that suit their economic interests. In light of the above, I believe that self-regulation is not an appropriate model for ex-ante economic regulation of access to Big Data.

2.3 Ex-ante Economic Regulation of Access to Big Data by Public Authorities

Having established that self-regulation is not an appropriate tool to regulate access to Big Data, this naturally leads to the conclusion that some kind of ex-ante economic regulation by public authorities is needed. Such regulation is particularly justified in situations where data access claims are not standardised and access conditions are not relatively stable, especially when the company controlling the set of Big Data needs to provide continuous rather than one-off or intermittent access.⁶⁶ Regulation of access to Big Data by public authorities can be carried out in multiple different forms that will be discussed below.

Ex-ante economic regulation of access to Big Data differs from ex-ante economic regulation of access to facilities in infrastructure sectors in that Big Data cannot be subject to sectoral regulation in the traditional sense of the word, since Big Data does not constitute an economic sector, but rather is a facility that is present in markets in most economic sectors. Moreover, Big Data present in one sector (or even in one market within a given sector) may differ greatly in its main characteristics from Big Data present in another sector.⁶⁷ Therefore, it is not possible to regulate access to Big Data as a facility in general. Rather, specific regulatory regimes are warranted for different categories of Big Data in different sectors or even markets within a given sector. However, this paper does not discuss the optimal regulatory regimes for access to specific categories of Big Data but is limited to general findings that apply to ex-ante economic regulation of access to all categories of Big Data.

2.3.1 Symmetric Economic Ex-ante Regulation of Access to Big Data

Symmetric access regulation imposes the same regulatory burden on all companies operating in a given market or economic (sub)sector, regardless of their market position. It is usually applied to network facilities that cannot be duplicated or where duplication would be inefficient. As such, it is commonly used in infrastructural sectors, where it complements asymmetric regulation.⁶⁸ Applying symmetric ex-ante economic regulation of access to Big Data in already highly concentrated markets driven by Big Data would mean that large

⁶⁶ CRÉMER, J., MONTJOYE, Y. A. de, SCHWEITZER, H. *Competition Policy for the Digital Era* [online]. Luxembourg: Publications Office of the European Union, 2019, 102 p. [cit. 19. 4. 2023]. Available at: <https://ec.europa.eu/competition/publications/reports/kd0419345enn.pdf>

⁶⁷ For example, Big Data in one sector (or market) may consist mainly of highly sensitive personal data, while Big Data in another sector (or market) may consist mainly of non-personal data.

⁶⁸ See: Directive (EU) 2018/1972 of the European Parliament and of the Council of 11 December 2018 establishing the European Electronic Communications Code, art. 61(3). Available at: <https://eur-lex.europa.eu/eli/dir/2018/1972/oj> [cit. 14. 5. 2023].

and already established companies could demand access to Big Data collected by small and innovative start-ups in niche markets. Moreover, they would then be able to combine it with their superior production factors to offer better products than smaller companies, slowly pushing them out of the market. In my opinion, the possibilities of such a scenario would limit the incentives for smaller companies to invest in innovation. This may prove particularly problematic as the investment incentives of smaller firms are usually larger than the investment incentives of larger firms, as they are based on marginal rather than average effects.⁶⁹ Therefore, an investment by a smaller company will attract more incremental users than a comparable investment by a larger company.⁷⁰ Furthermore, symmetric ex-ante economic regulation of access to Big Data would require all companies to establish the same facilities to ensure compliance. This would naturally be much easier for larger companies, which have more financial and human resources, than for smaller companies. For them, complying with such requirements would be a significant burden, which would be an additional barrier to entry. Symmetric ex-ante economic regulation of access to Big Data would therefore only further consolidate already highly consolidated markets. Having said all this, I am of the opinion that symmetric ex-ante economic regulation is not a suitable model for ex-ante economic regulation of access to Big Data.

2.3.2 Asymmetric Ex-ante Economic Regulation of Access to Big Data

Asymmetric ex-ante economic regulation represents the differentiation of regulatory obligations for companies depending on their market power or other parameters.⁷¹ It is based on the assumption that active measures (positive discrimination) are necessary to allow smaller companies to enter the market and/or the opportunities to compete effectively.⁷² Asymmetric regulation identifies the advantages that larger companies with an already established market position have over companies seeking to enter the market in question and/or smaller companies already present in the market. It then balances these by imposing relevant obligations (usually access obligations) on larger companies with an already established market position that do not apply to companies that are not yet active in the market and/or smaller companies that are already active in the market. The main criticism of asymmetric regulation is that it encourages inefficient companies to enter and stay in the market.⁷³ As efficient companies become more efficient, keeping the inefficient companies

⁶⁹ SOKOL, D. D., COMERFORD, R. Antitrust and Regulating Big Data. *George Mason Law Review*. Arlington: Antonin Scalia School of Law, 2016, Vol. 23, no. 5, pp. 1129–1162, p. 1150. ISSN 1068-3801.

⁷⁰ *Ibid.*, p. 1151.

⁷¹ Companies with more market power or companies that meet other requirements have more and/or stricter regulatory obligations than companies with less market power or companies that do not meet certain requirements.

⁷² For more information on asymmetric regulation, see MONTERO, J.J. Asymmetric Regulation for Competition in European Railways. *Competition and Regulation in Network Industries*. Newbury Park: SAGE Publications Inc, 2019, Vol. 20, no. 2, pp. 184–201, pp. 186, 187. ISSN 1783-5917. DOI: <https://doi.org/10.1177/1783591719861722>

⁷³ For more information on the critiques of asymmetric regulation, see HOROWITZ, R.B. *The Irony of Regulatory Reform. The Deregulation of American Telecommunications*. Oxford: Oxford University Press, 1991. ISBN 978-0195069990.

in the market requires ever greater asymmetries that reduce the efficiency of the market as a whole.⁷⁴ Moreover, some authors point out that asymmetric regulatory regimes are more difficult to manage than symmetric ones.⁷⁵ The above criticisms are not entirely unfounded, but can be overcome both by introducing well thought-out compliance management and monitoring mechanisms and by substantively and temporally limiting the granted asymmetric advantages. The latter does not prevent inefficient companies from entering the market – but it does prevent them from staying in the market.

Two important legal documents applicable to Big Data driven markets, namely the Digital Markets Act (henceforth: DMA)⁷⁶ and the German Act against Restraints of Competition after its tenth amendment (henceforth: GWB),⁷⁷ contain asymmetric rules that only apply to certain categories of addresses. The DMA is only applicable to gatekeepers, i.e. companies that have a significant impact on the internal market, provide a core platform service which is an important gateway for business users to reach end users and enjoy an entrenched and durable position in its operations, or it is foreseeable that it will enjoy such a position in the near future.⁷⁸ In addition, the DMA sets out quantitative criteria for classifying a company as a gatekeeper⁷⁹ and obliges them, *inter alia*, to “provide business users and third parties authorized by a business user, at their request, free of charge, with effective, high-quality, continuous, and real-time access to, and use of, aggregated and non-aggregated data, including personal data, that is provided for or generated in the context of the use of the relevant core platform services or services provided together with, or in support of, the relevant core platform services by those business users and the end users engaging with the products or services provided by those business users.”⁸⁰ In addition, the tenth amendment of the GWB, which was passed by the Bundestag in 2021, complemented, *inter alia*, Art. 19 with Art. 19.a, which establishes various ex-ante economic regulation obligations that apply exclusively to undertakings with “paramount significance for competition across markets” while defining the conditions that an undertaking must fulfil in order to have such significance, which are, however, more open-ended than the conditions for gatekeepers

⁷⁴ MONTERO, J.J. Asymmetric Regulation for Competition in European Railways. *Competition and Regulation in Network Industries*. Newbury Park: SAGE Publications Inc, 2019, Vol. 20, no. 2, pp. 184–201, p. 189. ISSN 1783-5917.

⁷⁵ CRANDALL, R. W., SIDAK, J. G., SINGER, H. J., The Empirical Case Against Asymmetrical Regulation of Broadband Internet Access. *Berkeley Technology Law Journal*. Berkeley: UC Berkeley School of Law, 2002, Vol. 17, no. 3, pp. 953–987, p. 954. ISSN 1086-3818.

⁷⁶ Regulation (EU) 2022/1925 of the European Parliament and of the Council of 14 September 2022 on contestable and fair markets in the digital sector and amending Directives (EU) 2019/1937 and (EU) 2020/1828. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32022R1925> [cit. 22. 5. 2023].

⁷⁷ Gesetz gegen Wettbewerbsbeschränkungen in der Fassung der Bekanntmachung vom 26. Juni 2013 (BGBl. I S. 1750, 3245), das zuletzt durch Artikel 2 des Gesetzes vom 19. Juli 2022 (BGBl. I S. 1214) geändert worden ist. Available at: <https://www.gesetze-im-internet.de/gwb/BjNR252110998.html> [cit. 23. 5. 2023].

⁷⁸ *Ibid.*, art. 3(1).

⁷⁹ *Ibid.*, art. 3(2).

⁸⁰ Regulation (EU) 2022/1925 of the European Parliament and of the Council of 14 September 2022 on contestable and fair markets in the digital sector and amending Directives (EU) 2019/1937 and (EU) 2020/1828, art. 6(10). Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32022R1925> [cit. 22. 5. 2023].

as provided for by the DMA.⁸¹ Art. 19.a of the GWB is particularly innovative in that it allows the Bundeskartellamt to prohibit several activities of undertakings with paramount importance across markets without having to prove an actual violation of competition law rules.⁸²

As the DMA is a European Regulation, it is directly applicable in the Member States and takes precedence over national legislation. Art. 1, para. 5 explicitly states that “*Member States shall not impose further obligations on gatekeepers by way of laws, regulations or administrative measures for the purpose of ensuring contestable and fair market,*” however Art. 1, para. 6 further provides that the DMA is “*without prejudice to the application of Articles 101 and 102 TFEU.*” This leads to the conclusion that the parallel applicability of the DMA and the GWB depends on whether Art. 19.a of the GWB is interpreted as ex-ante or ex-post economic regulation.⁸³ If the rules of Art. 19.a of the GWB were interpreted as ex-post economic regulation, they could be applied cumulatively with the DMA, and *vice versa*, if they were interpreted as ex-ante economic regulation, the DMA would prevail. I am of the opinion that Art. 19.a of the GWB should be interpreted as ex-ante economic regulation, as it sets out abstract and general obligations that companies have to follow in the future, and does not regulate already realised individual and concrete positions.

One can conclude that both acts apply to large companies operating in Big Data driven markets, especially multi-sided internet platforms. Moreover, both contain, *inter alia*, asymmetric access obligations in relation to competitively relevant Big Data. The model of asymmetric ex-ante economic regulation of access to Big Data is thus more than just a theoretical concept, as it is already being implemented in practise.

I believe that asymmetric ex-ante economic regulation of access to Big Data is justified because the markets driven by Big Data are special in that the market positions of the leading firms are extremely consolidated and consequently difficult to attack due to, *inter alia*, extreme economies of scale, strong direct and indirect network effects, and the snowball effect that create barriers to entry that are difficult to overcome. In addition, a few companies control most of the world’s economically relevant data, which is an essential input for offering many services in downstream markets. Therefore, it is very difficult, if not impossible,

⁸¹ Gesetz gegen Wettbewerbsbeschränkungen in der Fassung der Bekanntmachung vom 26. Juni 2013 (BGBl. I S. 1750, 3245), das zuletzt durch Artikel 2 des Gesetzes vom 19. Juli 2022 (BGBl. I S. 1214) geändert worden ist, art. 19.a(1). Available at: <https://www.gesetze-im-internet.de/gwb/BjNR252110998.html> [cit. 23. 5. 2023].

Also see: BOTTA, M. Sector Regulation of Digital Platforms in Europe: uno, nessuno e centomila. *Journal of European Competition Law and Practice*. Oxford: Oxford University Press, 2021, Vol. 12, no. 7, pp. 500–512, p. 502. ISSN 2041-7772. DOI: <https://doi.org/10.1093/jeclap/lpab046>

⁸² In addition, the UK Competition and Markets Authority has published a recommendation for the regulation of companies with “strategic market status”, i.e. companies that have entrenched and substantial market power, also clearly defining the conditions for obtaining such status. See A New Pro-Competition Regime for Digital Markets. Advice of the Digital Markets Taskforce. *UK Competition and Markets Authority* [online]. 2020 [cit. 22. 5. 2023]. Available at: <https://www.gov.uk/cma-cases/digital-markets-taskforce>

⁸³ For more information on the relation between the DMA and national legal acts, see JUNGERMANN, S. The Digital Markets Act and the Applicability of National Competition Law: § 19a of the German Competition Act. *Competition Law and Policy Debate*. Cheltenham: Edward Elgar Publishing, 2022, Vol. 7, no. 3, pp. 130–136, p. 135. ISSN 25423967. DOI: <https://doi.org/10.4337/clpd.2022.03.04>

for smaller companies to compete with incumbents in actual or potential downstream markets unless asymmetries in access to Big Data exist in their favour. Moreover, the above peculiarities also apply to a number of markets in infrastructure sectors that are traditionally subject to asymmetric ex-ante economic regulation of access, except that they are even more pronounced in markets driven by Big Data. Therefore, *a minori ad maius*, such regulation is also justified in Big Data driven markets.

2.3.3 Possibilities for “Progressive” Regulation

Progressive regulation is a form of regulation in which the regulatory burden is progressively tightened. In terms of ex-ante economic regulation of access to Big Data, this means that initial regulatory obligations would be mild and take the form of incentives to share Big Data. If such measures were not successful, stricter obligations would be introduced. Since the markets driven by Big Data are not yet mature and are characterised by extremely rapid technological progress, such regulation is interesting from a theoretical point of view. By applying it, regulators would avoid the risk of regulatory failure, at least initially. Moreover, it is likely that the risk of stricter regulatory obligations later on would lead companies to voluntarily grant actual or potential competitors from downstream markets access to the Big Data they control, or at least do so under more lenient regulatory obligations, thereby avoiding the need to take more stringent measures. However, I believe that progressive regulation would be difficult to implement as it would be extraordinarily burdensome to administer and control. Moreover, it would also be difficult to assess whether or not there is a need for stricter regulatory obligations.

Findings

The Commission considers that ex-ante economic regulation is justified in markets where there are high and non-transitory barriers to entry and which are structurally prone to inefficient competition, with competition law unable to effectively address the market failures identified above. Markets driven by Big Data meet all of the above criteria. The accumulation and processing of Big Data involves extremely high (prohibitive) start-up costs. However, once the relevant facilities are in place, the economies of scale are virtually infinite – in other words, economic efficiency grows exponentially in such cases, with average costs falling *ad infinitum*. Combined with strong direct and indirect network effects, this leads to the conclusion that barriers to entry are particularly high, persistent and difficult for new entrants to overcome. Furthermore, markets driven by Big Data tend to be structurally inefficiently competitive, as all the above factors, coupled with, *inter alia*, the snowball effect and the “winner takes it all” principle, lead to the formation of monopolies or oligopolies in the control of Big Data. Thus, the controlling companies can deny access to sets of Big Data, which are necessary for competition in actual or potential downstream markets, and reserve them for themselves. In such cases, Big Data represents a classic monopolistic bottleneck. Finally, competition law is not an appropriate tool to address the above concerns

for a variety of reasons. First, competition law, which is traditionally price-oriented, faces significant challenges in adapting to zero-price markets.

The basis of abuse of dominance cases is the definition of the relevant market, which is traditionally done with the SSNIP test. However, if the product in question has no price, which is the case in zero-price markets, the letter test is no longer applicable. In legal theory, it has been proposed to use either the SSNDQ or the SSNIC test as a substitute for the SSNIP test. Both are theoretically sound but, in my opinion, extremely difficult, if not impossible, to operationalise. This leads to the conclusion that there is no systematic tool for defining relevant zero-price markets, which means that *ad hoc* definitions based on qualitative criteria have to be applied, which can lead to inconsistent market definitions and should, in my opinion, be avoided if possible.

In addition, competition law procedures, especially the complicated ones, are very lengthy. This can be particularly problematic in Big Data access cases, as the relevant markets are characterised by both rapid technological progress and rapid consolidation (or even fortification) of established market positions. Therefore, even if the requesting company is granted access to the relevant set of Big Data at the end of such (lengthy) proceedings, it is likely that the product it wanted to offer is already technically obsolete by that time and/or that the controlling company has already consolidated its market position in the course of the proceedings to such an extent that it is no longer contestable.

Finally, it can be noted that markets driven by Big Data are plagued by systemic market failures. Since competition law has traditionally been oriented towards resolving specific disputes that have already arisen (as after-the-fact economic regulation), it is not an appropriate tool to address systemic market failures. Therefore, I believe that competition law should be used as a background regime together with ex-ante economic regulation, as it is, on its own, not a sufficient tool for obtaining access to Big Data.

Having established that some form of ex-ante economic regulation of access to Big Data is warranted, especially in cases where continuous access is demanded and the conditions of access are not relatively stable, the next step is to identify the optimal model for such regulation. In my view, self-regulation is not an appropriate primary regulatory model for this task, as it is fraught with the possibility of regulatory capture and the lack of control by regulators over rule-making and implementation. Access to Big Data controlled by the largest companies in the world is not only in the interest of companies actually or potentially active in (actual or potential) downstream markets, but also in the interest of society as a whole. However, granting such access is not in the interest of the controlling companies, as it is economically disadvantageous for them. Self-regulation has proven in the past to be an insufficient tool for regulating sectors and/or markets where the public interest is opposed to the economic interests of powerful companies. Therefore, in my opinion, self-regulation could only be applied to a lesser extent in the form of regulated self-regulation, where authorities set red lines within which self-regulation is allowed, but not as a primary model for ex-ante economic regulation of access to Big Data.

I believe that symmetric ex-ante economic regulation of access to Big Data by public authorities is also not an appropriate model, as it would only lead to further concentration of already highly concentrated markets. Symmetric regulatory rules would place equal obligations on small and large companies, allowing the latter to demand access to Big Data that smaller companies have collected in niche markets. On this basis, larger companies would be able to offer better products than smaller companies due to their superior production factors and thus exclude them from the market. Even if such a scenario did not occur, the mere possibility that it might would reduce incentives for smaller companies to invest in innovation and thus harm consumer welfare.

In my view, the appropriate model for ex-ante economic regulation of access to Big Data is asymmetric ex-ante economic regulation, the characteristic of which is the establishment of asymmetric obligations. In other words, companies that meet certain criteria, usually larger and/or more powerful companies, have to follow stricter rules than smaller companies. In the case of access to Big Data, this would mean that only larger companies would be obliged to share Big Data that they control, but not the smaller companies. Such positive discrimination would both limit the possibilities for market concentration and level the playing field somewhat for smaller companies, allowing them to compete with their larger rivals in actual or potential downstream markets on the basis of their innovativeness. In other words, such companies would not be excluded from actual or potential downstream markets simply because they do not have access to the relevant Big Data. The model of asymmetric ex-ante economic regulation of access to Big Data has been adopted by the DMA and by Art. 19.a of the GWB, both imposing obligations on large companies active in markets driven by Big Data (gatekeepers and companies with paramount significance across markets) to share competitively relevant Big Data, while the same obligation does not apply to smaller companies active in the same markets. Moreover, asymmetric regulation has also been identified by the UK CMA as the optimal model for regulating companies “with strategic market status.” Progressive regulation, while interesting and even sound from a theoretical perspective, would in my view be extremely difficult to operationalise and is therefore not a suitable model for ex-ante economic regulation of access to Big Data.