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Abstract: We have moved from an industry and product based economy, to a data and service based one. Currently, there are extensive debates on potential shortcomings of EU competition law in dealing with big data companies. This paper will thus suggest possible and pragmatic improvements to the EU Merger Regulation (EUMR) and Article 101 in particular.

1. European Merger Regulation amendments

It has been widely debated and argued that the current provisions in the EUMR have substantial gaps in being able to effectively and efficiently deal with merger assessment in order to achieve the regulation's purpose. One particular reason why this paper explores amendments to merger regulation at EU level and at member state level is that the majority of data-driven mergers between data companies often have effect on several member states. Therefore, a level of harmonization is desirable at EU level, after which National Competition Authorities (NCAs) will have guidance on implementing their own legislation for cases which fall under national jurisdiction. The EUMR will be one of particular focus in proposing amendments due primarily to the fact that it is an ex ante tool used to prevent possible future harm to the market that cannot be undone later, and it must therefore possess the adequate measures so as not to have to invoke ex post tools after infringement occurs. Several specific shortcomings have been identified under the EUMR and proposals will be made toward: amending the financial turnover threshold and suggesting additional thresholds to be included, and the assessment of network effects in the data market.

1.1. Financial turnover threshold proposals

It is recognized that concomitantly to financial thresholds, another method of merger notification and/or threshold should be adopted in order to properly address said mergers within its parameters and the effect that it will have on the market. It has widely been argued

that perhaps the threshold should be altered, and there may be a need for another type of threshold with the issue of big data companies. Furthermore the issue was raised during the EDPS-BEUC Conference on Big Data¹ where a discussion about the issue was initiated and the conclusion was, among other things, that a new set of rules would be useful. Commissioner Vestager explored the possibility of amending the current turnover threshold during the conference.² The amendments to the current notification thresholds set out in this paper are to include size of transaction thresholds, and then a series of non-monetary thresholds such as number of consumer thresholds and data value thresholds in bringing mergers under the scope of review.

1.2. Size of transaction thresholds

Taking into account and including the size of transactions in the EUMR could be a more efficient and effective method of reviewing mergers. This type of threshold is broad enough³ that it can fit comfortably within the current framework and general purpose of the EUMR. Sometimes a large undertaking on the market may conduct a data-driven merger such as the Facebook/Whatsapp merger, which does not meet the financial turnover thresholds of the European Commission (EC) due to the fact that the smaller undertaking does not have sufficient turnover to be caught by the EUMR. But this does not mean that the merger will not have an appreciable effect on competition, and the data possession of the smaller undertaking can be the inherent value and motivation behind the merger in the first place. Therefore, the size of the transaction can well be indicative of the potential competitive value

¹ GEORGE, Thomas. "Big Data and Competition." *European Commission - European Commission*. N.p., 29 Sept. 2016. Web. <https://ec.europa.eu/Commission/Commissioners/2014-2019/vestager/announcements/big-data-and-competition_en>.

² GEORGE, Thomas. "Big Data and Competition." *European Commission - European Commission*. N.p., 29 Sept. 2016. Web. <https://ec.europa.eu/Commission/Commissioners/2014-2019/vestager/announcements/big-data-and-competition_en>.

of the merger in question. Furthermore, data can effectively be considered the new currency⁴ due to the fact that, as explored earlier, the collection of data is sometimes the main business activity of certain companies, and users pay for the services of certain social media platforms by providing their personal data and information thereby making it in effect a currency in the digital world. One of the EC's mantras is that each competitor should determine its own business activity/policy. For this reason as well, a size of transaction test inclusion into the current EUMR would reflect the emerging features of digital markets with data as a new currency.

Size of transaction thresholds are not a new concept. In fact, the United States uses the size of a transaction as one of their notification thresholds for the FTC to review. Transactions valued at more than US\$323 million are subject to the HSR Act without reference to the size of the person, unless otherwise exempt. Furthermore, most recently both the German and Austrian NCAs have implemented a size of transaction threshold.

The U.S possesses similar stipulations with regard to merger notification where it also takes into account the value of the parties, with an addition of the size of transaction test. This demonstrates that such a stipulation as the size of person test would be well applicable and a good addition to the current merger notification thresholds contained in the EUMR. The adoption of a size of transaction provision modelled after that of the US's would not be out of line with established EU competition policy and trends.

The inclusion of a size-of-transaction provision into the EUMR would be broad enough to be applicable across a wide range of mergers and would allow the interpretation to

⁴ Eleonora Ocello, Cristina Sjodin, 'What's Up with Merger Control in the Digital Sector? Lessons from the Facebook/Whatsapp EU Merger Case, 1 *Competition Merger Brief* (February 2015), page 2.

vary, if need be, on a case-by-case basis and adjusted annually. It would thus tackle issues where a high turnover company takes over another lower turnover company that is exempt from oversight due to insufficient turnover under the current provisions of the EUMR, but where the high purchase price indicates the competitive relevance of the acquisition. The idea in Germany of implementing a size of transaction threshold came from observing and assessing the benefits of other jurisdiction that use a similar size of transaction approach, such as Canada and the United States. The idea by the German legislative body also stems from the concern that the current turnover thresholds in place are inadequate to properly assess transactions that occur in the digital economy, where the thresholds of the transaction are not met but the merger or acquisition may nonetheless raise competition concerns and/or threaten competition in the market.⁵ A Green Paper on digital platforms released by the German Federal Ministry for Economic Affairs and Energy suggested sending a message to Brussels and implementing a 350 million Euro transaction value notification threshold,⁶ which would have incidentally brought the USD 22 billion⁷ merger between Whatsapp and Facebook well under its scope.

1.3. Consumer thresholds

Consumer thresholds could also be implemented concomitantly to size of transaction and financial turnover thresholds and would also address the issues of assessment of network effects which was a factor in the Facebook/Whatsapp case. Perhaps a solution could be adding a new requirement of a number of consumers affected in the transaction, meaning that

⁵ Freshfields Bruckhaus Deringer LLP -Dr. Frank Röhling and Christoph Hinrichsen. "Germany Merger Control Update: New Merger Control Threshold Will Take into Account the Size of the Transaction." *Lexology*. N.p., n.d. Web. <<http://www.lexology.com/library/detail.aspx?g=5fc6791a-5100-4651-a1fd-3a1827eb5fef>>.

⁶ "Green Paper - Digital Platforms." *DE.DIGITAL - Green Paper - Digital Platforms*. N.p., n.d. Web. <<https://www.de.digital/DIGITAL/Redaktion/EN/Publikation/green-paper.html>>. Page 45

⁷ Commission Decision of October 3, 2014 in case No COMP/M.7217 - Facebook/Whatsapp, para. 4

if companies merge and it involves consumer data, then the actual number of consumers should be taken into account as threshold for merger control. A consideration in this could also be growth in the consumers in a given online platform as a measure for merger control, subject to a percentage of the addressable market. For instance, If Germany has 15 million users and Facebook + Whatsapp are only 1% of the 15 million then it is not significant. But if they are growing at a 100% compound annual growth rate then it is significant and valid to take into consideration.

Since data is potentially monetizable by companies operating on the digital market and the possession of personal data as a currency is essentially the possession of users' profiles, this could be an efficient way of bringing a merger under review. This is because if, when looking at the multi-homing of users on social media sites, a given social media site has the vast majority of users without said users being able to readily switch to another social media app due to the enormity of an individual's acquaintances using that specific social media app, then that app effectively does not face any real competition. Therefore, when there is a planned merger or acquisition of social media apps, analyzing the amount of users present in both of them would be an indicative parameter of the potential competition they would face post-merger. This type of threshold would require a review of the way a company's market position is analyzed which should include a thorough investigation of network effects and users' ability to multi-home between apps. Furthermore, in order to ascertain market share, the number of users must be analyzed as well as the user growth rate. Attention should also be given to barriers to entry for potential newcomers, and whether they would be too high as a result of the strengthening of network effects.

1.4. Data value thresholds

This is a more theoretical proposal which would require an investigation into how data can be monetized. The potential value of data depends on what the company in question uses it for. For instance, whether it is more likely to use the data to best tailor advertisements, and therefore generates its revenue from ads, or whether it sells off user data to third parties who are then able to in turn monetize it. To demonstrate this point, Uber's business activity is to be a cheap transport provider but its value is estimated at USD 68 billion because it owns the biggest pool of data about supply and demand for personal transportation.⁸ Therefore the EC should examine the impact of mergers on the users and whether the merger would be likely to lead to the plummeting of quality of the service for users (such as privacy protection as examined with the Facebook/Whatsapp merger), as well as on the market in which it would be able to monetize it's data.⁹

Collection of data can come at almost no cost where this data then helps the companies monetize it through the use of ads. Companies such as Facebook and Google are able to collect user data through social logins that lets individuals login to various sites with the help of their social media login. Therefore, it follows suit that the value of a company could potentially be quantified (as in Uber's case) by the amount of data it possesses. Hence a data value threshold could be well indicative of the potential effect on competition, and could go hand-in-hand with or supplement a consumer value threshold which was previously explored.

⁸ The Economist: "The world's most valuable resource" *Data and the new rules of competition*. May 6th. Print. Page 14.

⁹ Stucke, Maurice E., and Allen P. Grunes. *Big Data and Competition Policy*. Oxford, United Kingdom: Oxford UP, 2016. Print. Page 224.

The above-mentioned amendments to the EUMR could be useful and valuable guidelines that the EC would likely feel comfortable with, and that would bring it up to speed in assessing big data companies' mergers.

4. Article 101 amendments

Article 101 may not be well equipped catch certain anticompetitive behavior when computer algorithms are involved. The main concerns sprout from increased market transparency, and the lack of or challenges in capturing and proving agreements within the conventional meaning of Article 101, which should be amended to include additional features adapted to the emergence of computer algorithms conducting certain company dealings in digital markets. As stated in Ariel Ezrachi and Maurice E. Stucke's joint book on virtual competition: 'Competition authorities may need to reassess and reinterpret the legal tools at their disposal to prevent and punish these [sophisticated computer algorithms] unusual new forms of anticompetitive restraints.'¹⁰ They go on to state that 'faced with the limited utility of current legal doctrines on agreement and intent [anticompetitive agreements] in the age of pricing algorithms, agencies will face the challenge of updating the enforcement toolbox to match the emerging challenges.'¹¹ In certain cases with algorithms, tacit collusion and parallel behavior are at the root of competitive harm and we must therefore examine whether tacit collusion should be regarded as anticompetitive behavior under Article 101. In facing algorithms, amendments to current legislation for Article 101 proposed in this paper will address the prime concerns of increased market transparency and lack or inability to prove agreements, and will take the form of: suggesting additional deterrent stipulations and

¹⁰ Ezrachi, Ariel, and Maurice E. Stucke. *Virtual Competition: The Promise and Perils of the Algorithm-driven Economy*. Cambridge: Harvard UP, 2016. Print. Preface, page viii

¹¹ Ezrachi, Ariel, and Maurice E. Stucke. *Virtual Competition: The Promise and Perils of the Algorithm-driven Economy*. Cambridge: Harvard UP, 2016. Print. Page 248.

shifting the requirements needed to establish anticompetitive behavior under which bringing tacit collusion within Article 101s scope.

4.1. Amending the requirements needed to ascertain anticompetitive behavior

The existence of explicit collusion and the traditional requirements for establishing agreements needed to prove anticompetitive behavior are slowly fading and becoming obsolete in the face of increased market transparency and algorithms with artificial intelligence, and may no longer be adequate for or indeed applicable to big data companies. Under current legislation competition authorities might lack the tools and means to establish the existence of an agreement of any kind, or even of the intent to engage in anticompetitive behavior. Therefore, competition authorities find themselves in a situation where big data companies can have the negative effect that competition legislation seeks to avoid, but absent the necessary features to prove it or that make it illegal under current legislation. To this extent, a viable solution would be to loosen up the definition or perception of the term agreement so as to give authorities more investigative power in examining scenarios in which there has been or could be harm to competition.

4.1.1. Bringing tacit collusion under the scope of Article 101

Tacit collusion has been a common feature throughout the algorithm influenced scenarios, which leads to parallel behavior in the market. As of now, tacit collusion is not considered as anticompetitive behavior under the current legislation. However, the rapid shift in conducting online business and using algorithms as well as artificial intelligence may entirely eliminate the appearance of any types of agreements or indeed provable collusion -

under current legislation- in the near future. To this end, competition legislation could veer away from trying to prove collusion, and instead look at all the features surrounding the competitive harm to the market. There must, of course, exist an anticompetitive effect on the market. For instance, if authorities can establish all the features of a cartel (such as similar prices leading to steady price increase and harm to consumers as well as lack of competition amongst players in the market, or consumer sharing) absent any anticompetitive agreement and only tacit collusion and parallel behavior such as examined in the predictive algorithm scenario, then authorities should be able to have more investigative powers into the alleged infringements and potentially declare illegal activity simply with the presence of tacit collusion and harm to the market. It would all the while be important to ensure no over-intervention.

Under the current stipulations of Article 101, authorities need to first prove agreement for there to be an anticompetitive infringement by effect. Whereas it would be more appropriate, when looking at pricing algorithms, to simply look at the harm to the market. To this end Article 101 could again borrow from its counterpart in US legislation, in particular something similar to that of Section 5 of the FTC Act which allows the Federal Trade Commission to bring claims against undertakings only showing ‘unfair practice’ which targets ‘Unfair methods of competition in or affecting commerce, and unfair or deceptive acts or practices in or affecting commerce,’¹² and without the necessity to show any evidence of an agreement. Section 5 of the FTC act ‘encompasses not only those acts and practices that violate the Sherman or Clayton Act but also those that contravene the spirit of the antitrust laws and those that, if allowed to mature or complete, could violate the Sherman or Clayton

¹² Title 15 U.S. Code § 45 - Unfair methods of competition unlawful; prevention by Commission, para. (a).

Act.’¹³ It therefore states that the FTC will have the power to examine practices that cause or are likely to cause substantial injury to consumers which is not reasonably avoidable by consumers themselves and not outweighed by countervailing benefits to consumers or to competition.¹⁴

In dealing with algorithm cases, the EC would do well to consider additional factors such as whether the companies involved 1) tacitly agreed to use algorithms with the aim of lessening competition on the market; 2) whether the business decisions they conducted were sound and whether there was a reasonable/legitimate reason behind them; 3) had knowledge that their actions could likely cause competitive harm to the market and amount to anticompetitive behavior. These considerations can be seen in practice in another case and area of the market, namely investment banking, where the US Securities and Exchange Commission (SEC) investigated Athena Capital Research in 2014.¹⁵ The SEC found that Athena’s computer algorithms were found to have manipulated stock prices and caused detrimental harm to prices, of which the company’s employees were well aware of. The company was therefore fined USD 1 million.

The aforementioned provision drafted after the US model and considerations would be a viable and effective addition to the EC’s antitrust toolbox in that the ‘unfair practices’ would not have to be specifically defined, and would therefore fit in line with the EU’s competition law policy of maintaining broad stipulations so as to allow the EC to apply reasonable means of attaining competition’s law overall objective. Essentially the

¹³ "Statement of Enforcement Principles Regarding Unfair Methods of Competition" Under Section 5 of the FTC Act." *Ftc.gov*. United States of America Federal Trade Commission, n.d. Web.

¹⁴ Title 15 U.S. Code § 45 - Unfair methods of competition unlawful; prevention by Commission, para. (n).

¹⁵ Decision of October 16, 2014 in case "United States of America Before The Securities and Exchange Commission In the Matter of Athena Capital Research, LLC." <https://www.sec.gov/litigation/admin/2014/34-73369.pdf>

interpretation of this provision could evolve with the changing digital market and allow precedents to tailor the meaning of unfair practice to big data company and algorithm cases.

4.2. Additional deterrent stipulations

With the rise of new potentially detrimental effects for competition and the general willingness of authorities to keep competition provisions broad so as to be applied through a wide range of sectors, adding additional punitive stipulations can work in effect as an ex ante deterrent which would make companies think twice or take extra care to make sure that no competitive harm will occur as a result of their use of algorithms. Due to the fact that algorithms are a new and subtle way for companies to maximize profits through behavior with anticompetitive effect, as was examined in the previous part of the paper, authorities must tread lightly in finding the proper way to potentially set this issue straight. Therefore initially it would be preferable to impose a special duty on companies using algorithms to take the extra step in trying to stay in line with competition principles. Furthermore, if there are anticompetitive concerns, the company could be required to walk the regulator through their algorithms and coding process demonstrating that they are staying in line with the competition principles. For this the EC may need to staff its investigatory teams with appropriate skillsets which will be offset by a tax payable by the likes of these big data companies. Professors such as Ariel Ezrachi have suggested that a possible audit of the algorithm could be in order to properly address the emerging concerns,¹⁶ however this could be criticized as too interventionist an approach following the general EU competition policy and legislative trend.

¹⁶ Ezrachi, Ariel, and Maurice E. Stucke. "Two Artificial Neural Networks Meet in an Online Hub and Change the Future (Of Competition, Market Dynamics and Society)." *By Ariel Ezrachi, Maurice E. Stucke :: SSRN*. N.p., 10 Apr. 2017. Web. <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2949434>. Para 4.2

For this specific amendment, the paper will draw upon established principles of criminal and other areas of law, where it will be maintained that an algorithm could constitute an aggravating circumstance to anticompetitive behavior. For instance, as we examined, algorithms could conduct the ‘bad deed’ for humans whilst distancing the humans from responsibility. This could be considered akin to hiding evidence and relying on an algorithm as something which currently cannot have responsibility attached to it. If a company is found to have used algorithms to maximize profits by, in part, engaging in anticompetitive behavior, they should be penalized with a higher fine that would otherwise have been the case had they not used the algorithm. Similarly, ‘independent learning’ algorithms such as examined in the omniscient algorithm scenario would not have their own independent liability. Rather companies should be responsible and liable for the algorithms they implement regardless of the lack of human intent or knowledge in creating the algorithm, and irrespective of their predictive or standalone nature. Now whilst this feature would not enhance the means of finding or proving anticompetitive behavior in or with the use of algorithms, it could potentially deter and disincentivize companies from adopting such an algorithm in the first place, or push them to take the extra step in ensuring to avoid any potential anticompetitive conduct as a result of using the algorithm by for instance programming the algorithm to specifically avoid any potential behavior which could be regarded as infringing competition law and causing competitive harm to the market. Therefore, companies may indeed sometimes get away with using algorithms to conduct their anticompetitive behavior, but they have the knowledge that if they get caught, the fine will be severely heftier than if they had not used it. This is similar to the leniency program under current competition provisions for whistleblowers, where a company which brings evidence of a cartel to the attention of the EC can benefit from either total immunity or a stark reduction in fines depending on the

circumstance.¹⁷ Coupled with this, since big data and digital markets are very young, the EC should deem them developing markets and therefore infringements on these developing markets for a period of, for instance, 5 years should be considered distorting a developing market and sanctioned more severely.

Furthermore, as an overall and more general suggestion, the EC would do well to invest in IT and computer programming so as to be able to properly investigate algorithms which are becoming a more and more widespread phenomenon amongst firms. It is the new competitive advantage that firms will likely have to either adopt, or be forced off the market. Parallel to this, the EC could take example from the UK's CMA discretion to launch sectoral and market investigations¹⁸ which could give the EC a more in-depth and tailored toolbox with which to approach the issue, and which would have been unobtainable through other means than a sectoral or market investigation.

A further amendment could be to target the arising concerns regarding market transparency. Amending legislation or guidelines could deem the use of algorithms coupled with anticompetitive behavior or market harm to be defined as market manipulation and abuse of market transparency where anticompetitive intent or knowledge of a potential anticompetitive infringement exists. However it must all the while be maintained that competition law policy should foster and propagate technological innovation rather than deter it, otherwise, as noted by Sam Tilford who is a chief economist at the Centre for European Reform; 'Europe will not be able to compete in the global economy on the basis of its current

¹⁷ "Leniency." *About the Cartel Leniency Policy - European Commission*. N.p., n.d. Web. <<http://ec.europa.eu/competition/cartels/leniency/leniency.html>>.

¹⁸ "Market Investigations Guidelines: CC3." *Market Investigations Guidelines: CC3 - GOV.UK*. N.p., n.d. Web. <<https://www.gov.uk/government/publications/market-investigations-guidelines>>.

specialization in medium-technology sectors.’¹⁹ Therefore It would be irrational and too regulatorily invasive to potentially prohibit or sanction the use of algorithms, or for companies to abstain from using algorithms for that matter. It is simply the direction that technological development and business operation is taking. Similarly, it would be an unviable regulatory approach to reduce transparency in the market since this is essentially data and information that is readily available to consumers as well, and it is the strategic and smart use of this data which can eventually lead to parallel behavior. Rather, it could be more beneficial to do the contrary and increase transparency of all databases e.g. the governments and their ministries and agencies currently possess a lot of information about individuals in their jurisdictions. If they were to make this available to all market players -in line with the privacy stipulations that will be brought under the GDPR- that could foster and allow for increased competition, allowing for more innovative newcomers to compete with the big data companies on a more level footing.

Proving anticompetitive intent behind an algorithm can be extremely complex bearing in mind their constantly-shifting paradigm, therefore absent the proper tools; the EC may not be able to adequately investigate such matters. Concomitantly, the EUMR may not be properly equipped to properly assess and evaluate data-driven mergers. This paper has suggested a bundle of tools that the EC could use, not necessarily altogether, but which would help keep up with and deal with the emerging features of big data companies in the digital era.

¹⁹ "Is EU Competition Policy an Obstacle to Innovation and Growth?" *Centre for European Reform*. N.p., n.d. Web. <<http://www.cer.org.uk/publications/archive/essay/2008/eu-competition-policy-obstacle-innovation-and-growth>>.