DISCUSSION

EU COMPETITION LAW AND ARTIFICIAL INTELLIGENCE: REFLECTIONS ON ANTITRUST AND CONSUMER PROTECTION ISSUES

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***Abstract**: The paper provides a brief overview of problems identified with use of artificial intelligence in the area of EU competition law. The paper extends the prevalent focus on pricing algorithms and price discrimination and shows how else artificial intelligence could be used to inhibit competition or harm a consumer. Potential possibilities related to agreements between undertakings, abuse of a dominant position and consumer protection including advertising and unfair commercial practices are described.*

***Keywords**: advertising, artificial intelligence, antitrust, big data, cartel, collusion, competition, consumer protection, consumer welfare, unfair commercial practices*

INTRODUCTION

Commercial transactions that take place in an electronic world are more and more affected by wide utilization of various algorithms and software agents equipped with artificial intelligence (hereinafter AI). Companies develop these tools in order to automate certain tasks that enable them to operate quickly and efficiently. Therefore, they are able to process huge amounts of data, communicate with a vast number of existing customers as well as potential clients, analyze current trends and react promptly to the ongoing changes in the market.

Intelligent software agents are capable of *"autonomous and self-directed behaviour"*.[1] They learn from the environment and often achieve their goals in an unpredictable manner. This crucial feature can, however, negatively impact competition in the electronic market where software agents negotiate with each other without human intervention. Recent literature has identified a number of potential issues, such as problems with collusion and fixing prices by these agents as well as determining legality of such actions,[2] or cre-

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[1] MOSTAFA, S. A., AHMAD, M. S., MUSTAPHA, A., MOHAMMED, M. A. A Concise Overview of Software Agent Research, Modeling and Development. *Software Engineering*. 2017, Vol. 5, No. 1, pp. 8–25.

[2] See especially EZRACHI, A., STUCKE, M. E. Artificial Intelligence & Collusion: When Computers Inhibit Competition. *University of Illinois Law Review*. 2017, No. 5, pp. 1775–1810; BALLARD, D. I., NAIK, A. S. Algorithms, Artificial Intelligence, and Joint Conduct. In: *Sheppard Mullin* [online]. 2017 [2018-02-02]. Available from: <https://www.sheppardmullin.com/media/article/1649_CPI%20-%20Ballard-Naik.pdf>; ZDZIEBORSKA, M. Brave New World of 'Robot' Cartels? In: *Kluwer Competition Blog* [online]. 7. 3. 2017 [2018-02-02]. Available from:<http://competitionlawblog.kluwercompetitionlaw.com/2017/03/07/brave-new-world-of-robot-cartels/>; or GILARDONI, P., LOW, A., BOYD, C. Can Robots Collude? In: *Gilbert + Tobin* [online]. 16. 11. 2017 [2018-02-02]. Available from: <https://www.gtlaw.com.au/insights/can-robots-collude>.

ation and possible misuse of dominant position through establishing and exploiting huge databases of clients' personal data that can violate consumer protection.

However, there are also some additional issues related to AI that need to be mentioned. The aim of this paper is, therefore, to briefly summarize key problems identified with regard to AI and antitrust, competition law and consumer protection, supplement them with additional findings and illustrate the problems within the framework of the European Union law. The paper thus provides a concise overview of problems identified in various sources.

1. ARTIFICIAL INTELLIGENCE AND ANTITRUST LAW

The foundations of antitrust law in law of the European Union can be found in the Treaty on the Functioning of the European Union (hereinafter TFEU).[3] Rules applying to undertakings regarding competition on the internal market prohibit certain agreements between undertakings[4] (Art. 101 TFEU) and abuse of a dominant position (Art. 102 TFEU). These rules are further implemented by several regulations.[5] The two provisions in TFEU differentiate between situations when two or more undertakings agree to act or simply act in a coordinated manner and hereby prevent, restrict or distort competition on the market and situations when an undertaking with a dominant position on the market abuses this position by using certain practices. The following sections shall describe potential problems with regard to AI.

1.1 Agreements between Undertakings

The existing literature on the topic focuses with regard to AI and agreements between undertakings especially on dynamic pricing. Dynamic algorithmic pricing, i. e. automated way of setting a price for a product or service with the aim to maximize profits of sellers while taking in account a number of variables including availability of a product/service, demand, or statistical data about peak selling hours, is often presented as an example of a technology that could also lead to automatically coordinated price setting.

The theory of collusion with regard to determining price with help or solely by AI has been developed by Ezrachi and Stucke in order to analyze potential problems with deter-

[3] Consolidated version of the Treaty on the Functioning of the European Union. In: *EUR-Lex* [online]. 26. 10. 2012 [2018-08-09]. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A12012E%2FTXT>.

[4] Often referred to as cartels.

[5] Namely Council Regulation (EC) No. 1/2003 of 16 December 2002 on the implementation of the rules on competition laid down in Articles 81 and 82 of the Treaty, Council Regulation (EC) No. 411/2004 of 26 February 2004 repealing Regulation (EEC) No. 3975/87 and amending Regulations (EEC) No. 3976/87 and (EC) No. 1/2003, in connection with air transport between the Community and third countries, Council Regulation (EC) No. 1419/2006 of 25 September 2006 repealing Regulation (EEC) No. 4056/86 laying down detailed rules for the application of Articles 85 and 86 of the Treaty to maritime transport, and amending Regulation (EC) No. 1/2003 as regards the extension of its scope to include cabotage and international tramp services, and Commission Regulation (EC) No. 773/2004 of 7 April 2004 relating to the conduct of proceedings by the Commission pursuant to Articles 81 and 82 of the EC Treaty.

mining liability as well as effects on the market.[6] These authors differentiate among four scenarios (or four categories of collusion) based on the level of technological development and use of AI: 1) Messenger; 2) Hub and Spoke; 3) Predictable Agent; and 4) Digital Eye (God View). In the *Messenger* scenario it is the humans who use AI to assist them in an illicit forming of a cartel. In the *Hub and Spoke* scenario a single algorithm is used to set the price by a number of various users while this practice leads to higher prices. In the *Predictable Agent* scenario various actors on the market are using individual yet similar algorithms that mutually interact. This situation results in tacit collusion (or conscious parallelism) and again this practice leads to higher prices. In the *Digital Eye/GodView* scenario individual algorithms learn about the market and "independently determine the means to optimize profit".[7] This case is very problematic itself due to the autonomy of algorithms and potential conscious parallelism or price increase would not be a result of human action. The presented classification has been reflected in a number of papers examining the problem of determining liability[8] and partly criticized from technical audience. Especially Ittoo and Petit criticized the existing literature on the topic for a lack of empirical evidence.[9] They investigated whether introduction of Reinforcement Learning technologies could lead to tacit collusion by smart pricing agents. Although they have not excluded the possibility of tacit collusion, they identified several challenges that currently prevent smart pricing agents from entering into tacit collusion.

However, dynamic pricing is not the only problem related to Art. 101 TFEU. This article prohibits all agreements having "as their object or effect the prevention, restriction or distortion of competition" on the market and in particular pinpoints agreements that "(a) directly or indirectly fix purchase or selling prices or any other trading conditions; (b) limit or control production, markets, technical development, or investment; (c) share markets or sources of supply; (d) apply dissimilar conditions to equivalent transactions with other trading parties, thereby placing them at a competitive disadvantage; (e) make the conclusion of contracts subject to acceptance by the other parties of supplementary obligations which, by their nature or according to commercial usage, have no connection with the subject of such contracts."[10] Currently, AI could be used to facilitate all types of the above mentioned agreements. For instance, smart technologies related to Predictive Demand and Capacity Planning are "able to identify both the quantitative rise in interest in a topic, as well as the context of that interest from semantic understanding of unstructured text"

[6] The original paper EZRACHI, A., STUCKE, M. E. *Artificial Intelligence & Collusion: When Computers Inhibit Competition* has been elaborated in a greater detail in EZRACHI, A., STUCKE, M. E. *Virtual Competition. The Promise and Perils of the Algorithm-driven Economy.* Cambridge: Harvard University Press, 2016.

[7] EZRACHI, A., STUCKE, M. E. *Artificial Intelligence & Collusion: When Computers Inhibit Competition. p.* 1783.

[8] For instance SMEJKAL, V. Cartels by Robots - Current Antitrust Law in Search of an Answer. *Journal for International and European Law, Economics and Market Integrations.* 2017, Vol. 4, No. 2, pp. 1-18, [2018-08-29]. Available at: <https://heinonline.org/HOL/P?h=hein.journals/inteulst4&i=88>, or COLOMBO, Niccolò. Virtual Competition: Human Liability Vis-a-Vis Artificial Intelligence's Anticompetitive Behaviours. *European Competition and Regulatory Law Review (CoRe).* 2018, Vol. 2, No. 1, pp. 11-23, [2018-08-29]. Available at: <https://heinonline.org/HOL/P?h=hein.journals/core2&i=17>.

[9] ITTOO, A., PETIT, N. Algorithmic Pricing Agents and Tacit Collusion: A Technological Perspective. In: *SSRN* [online]. 17. 10. 2017 [2018-08-29]. Available at: <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3046405>.

[10] Art. 101 par. 1 TFEU.

based on analysis of "online browsing data, YouTube video views, and conversations on social media".[11] By using information from this source, AI could similarly to pricing algorithms (or in connection with them) negotiate limitation of production in order to increase a price. Moreover, algorithms could mutually provide to one another access to data as "sources of supply" of various electronic services. In this case the analysis of an illicit behavior could get even more complicated in the light of the recent EU initiative on supporting free flow of non-personal data.[12] Moreover, current natural language processing algorithms are mature enough to understand meaning of text and logical relationships among involved subjects. With help of these technologies that would also understand market functioning, agreements under (d) and (e) could be realized.

1.2 Abuse of a Dominant Position

Abuse of a dominant position by one or more undertakings is not precisely defined in Art. 102 TFEU. However, the provision provides four examples of what could be considered as an abuse. The examples of abuse roughly correspond to prohibited behavior under Art. 101 TFEU. Abuse may, therefore, especially consist in "(a) directly or indirectly imposing unfair purchase or selling prices or other unfair trading conditions; (b) limiting production, markets or technical development to the prejudice of consumers; (c) applying dissimilar conditions to equivalent transactions with other trading parties, thereby placing them at a competitive disadvantage; or (d) making the conclusion of contracts subject to acceptance by the other parties of supplementary obligations which, by their nature or according to commercial usage, have no connection with the subject of such contracts".

Again, like with cartels, the literature focuses mainly on the issue of price discrimination mostly based on behavioral profiling.[13] However, the phenomenon of Big Data (an information asset characterized with high volume, high velocity, and/or high variety)[14] and availability of this kind of data provides a great advantage to those who possess them. Current methods of data analysis and exploitation of AI give rise to an unprecedented information asymmetry. Interesting questions that are being examined with regard to Big Data

[11] DHL. Artificial Intelligence in Logistics. A collaborative report by DHL and IBM on implications and use cases for the logistics industry. In: *DHL* [online]. 2018 [2018-12-29]. Available at: <https://www.logistics.dhl/content/dam/dhl/global/core/documents/pdf/glo-ai-in-logistics-white-paper.pdf>. See p. 25.

[12] For an overview of activities in this field see EUROPEAN COMMISSION. Free flow of non-personal data. In: *European Commission* [online]. [2018-9-29]. Available at: < https://ec.europa.eu/digital-single-market/en/free-flow-non-personal-data>.

[13] For instance EZRACHI, A., STUCKE, M. E. *Artificial Intelligence & Collusion: When Computers Inhibit Competition*; EZRACHI, A., STUCKE, M. E. *Virtual Competition. The Promise and Perils of the Algorithm-driven Economy*; BEJČEK, J. O vlivu digitalizace na soutěžní právo – mnoho povyku pro nic? In: J. Suchoža – J. Husár – R. Hučková (eds.). *Právo, Obchod, Ekonomika VIII*. Košice: Univerzita P. J. Šafárika v Košiciach, 2018; or MEHRA, S. K. Antitrust and the Robo-Seller: Competition in the Time of Algorithms. *Minnesota Law Review*. 2016, Vol. 100, No. 4, pp. 1323-1376, [2018-08-29]. Available at: <https://heinonline.org/HOL/P?h=hein.journals/mnlr100&i=1363>.

[14] LANEY, D. 3D Data Management: Controlling Data Volume, Velocity, and Variety. In: *Gartner* [online]. 6. 2. 2001 [2018-08-29]. Available at: <https://blogs.gartner.com/doug-laney/files/2012/01/ad949-3D-Data-Management-Controlling-Data-Volume-Velocity-and-Variety.pdf>.

are for instance "could owning a significant data set make you a dominant undertaking and therefore subject to added scrutiny? Or can a large data set reinforce a dominant position in another market? Does having a dominant position make you more able to accumulate a large data set and use it to exploit other markets?"[15]

Apart from these questions, answers to which shall depend on particular data sets, one also needs to consider question of a possibility of an undertaking with a dominant position to communicate with a huge number of their users. Not only are companies able to monitor behavior of people but current AI systems in the form of chatbots can talk and listen and derive specific information based on direct interaction, not only passive observation. This ability gives them more efficient means to exploit and potentially misuse their dominant position. The above mentioned can be reinforced also through specific problems related to abuse of market power in ICT sector such as the network effect, a problem of technology shift, a problem of defining the relevant market, or a problem of the relationship between the protection of intellectual property and the protection of competition.[16]

Lastly, it is important to mention that market power can be gained also through so called comparison intermediaries who provide a service of comparing prices from different providers.[17]

2. ARTIFICIAL INTELLIGENCE AND CONSUMER PROTECTION

Although consumer protection does not form a part of competition law, both of the policies share the goal of protecting consumer welfare and they complement and reinforce each other.[18] Especially in the EU law and in European Commission's documents, there is a number of references in competition law explicitly mentioning the need to protect consumers.[19]

Consumer protection in the EU is guaranteed mainly by the Unfair Commercial Practices Directive[20] and by the Directive on misleading and comparative advertising.[21]

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[15] MOORCROFT, V., LE STRAT, A. The rise of Big Data - Intersection between Competition law and customer data. In: *Bird & Bird* [online]. 2018 [2018-08-29]. Available at: <https://www.twobirds.com/en/news/articles/2018/uk/the-rise-of-big-data-intersection-between-competition-law-and-customer-data>.

[16] KRAUSOVÁ, A. Abuse of Market Power in ICT Sector. *The Lawyer Quarterly*. 2018, Vol. 8, No. 1, pp. 75–81.

[17] See EZRACHI, A., STUCKE, M. E. *Virtual Competition. The Promise and Perils of the Algorithm-driven Economy. pp.* 135 et seq.

[18] OECD. The Interface between Competition and Consumer Policies. In: *OECD* [online]. 2008 [2018-08-29]. Available at: <http://www.oecd.org/regreform/sectors/40898016.pdf>.

[19] For details see for instance Chapter 2 of ALBŒK, Svend. Consumer Welfare in EU Competition Policy. In*: European Commission* [online]. 2013 [2018-08-29]. Available at: <http://ec.europa.eu/dgs/competition/economist/consumer_welfare_2013_en.pdf>.

[20] Directive 2005/29/EC of the European Parliament and of the Council of 11 May 2005 concerning unfair business-to-consumer commercial practices in the internal market and amending Council Directive 84/450/EEC, Directives 97/7/EC, 98/27/EC and 2002/65/EC of the European Parliament and of the Council and Regulation (EC) No 2006/2004 of the European Parliament and of the Council ('Unfair Commercial Practices Directive').

[21] Directive 2006/114/EC of the European Parliament and of the Council of 12 December 2006 concerning misleading and comparative advertising (codified version).

Commercial practices are unfair if they are "contrary to the requirements of professional diligence, and […] materially distort or are likely to materially distort the economic behaviour with regard to the product of the average consumer whom it reaches or to whom it is addressed, or of the average member of the group when a commercial practice is directed to a particular group of consumers".[22] These practices can typically be misleading or aggressive practices. However, any practice fulfilling the above mentioned definition can be considered as unfair. This, however, gives a rise to a number of questions with regard to AI applications. Some authors claim that the current consumer law needs revisiting while taking in account real uses of AI. Moreover, consumer law will be more and more intertwined with personal data protection.[23] Again, unfair commercial practices are often tightly connected with price discrimination and price comparison. Especially applications that analyze willingness of customers to pay might show as problematic.[24]

Special rules also apply to advertising. Advances in intelligent advertising have enabled companies to use various techniques to attract their customers.[25] Misleading and comparative advertising may become issue in the future. Given the advancing technology of creating a high quality automated text as well as images that would be fake would represent a significant issue for comparison intermediaries. Moreover, liability problems shall arise with the existence of fake automatically created advertisements.

CONCLUSION

Artificial intelligence poses problems in all spheres of competition law and despite being currently oriented mainly on pricing issues, the problems and potential issues are way broader. The competition law will in the future intertwine more and more with data protection laws. However, not only personal but also non-personal data shall play a significant role in the competition law. Especially data analysis, predictive technologies, natural language processing technologies, as well as image processing technologies shall significantly influence the market and, therefore, also competition law. One needs to consider specificities and identify concrete threats with regard to specific domains and analyze them also from a technical point of view. Law itself, without being enabled and supported by technology can never be efficient in our digital world.

[22] Art. 5 par. 2 of the Unfair Commercial Practices Directive.

[23] PAŁKA, P., JABŁONOWSKA, A., MICKLITZ, H. W., SARTOR, G. Before machines consume the consumers. In: *European University Institute* [online]. 2018 [2019-01-10]. Available at: <http://cadmus.eui.eu/bitstream/handle/1814/57485/WP_2018_12.pdf?sequence=1>.

[24] See for instance AI pricing platform Yieldigo – www.yieldigo.com.

[25] ADAMS, R. Intelligent Advertising. *AI & Society*. 2004, Vol. 18, No. 1, [2018-08-28]. Available at: < https://search-proquest-com.ezproxy.techlib.cz/docview/223761511?pq-origsite=summon>.