

Shaping competition policy in the era of digitisation

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1 Introduction

1. The Monopolies Commission welcomes the European Commission's call for contributions to discuss competition policy in the era of digitisation and thanks the European Commission for the opportunity to present its views on one of the most challenging policy issues.¹

2. In the digital economy, the analysis and the economic use of large amounts of data ("big data") are becoming increasingly important. The instruments used for this purpose are grouped together and referred to using the common term "algorithms". Among other applications such algorithms are used for pricing (pricing algorithms).

3. The use of algorithms – including pricing algorithms – enhances economic benefits to market participants. Companies use algorithms to optimize prices and quantities, among other things. Thus, pricing algorithms are used to dynamically adjust prices for flight seats and hotel nights to changing market conditions. In the e-commerce sector, a considerable proportion of online retailers use software solutions to monitor competitors' prices and adjust their own prices accordingly.² In addition, algorithms are used to improve the quality of products and services such as search results or personalized product recommendations.

4. Consumers can benefit directly and indirectly through the use of algorithms, *e.g.* through reduced search and transaction costs. Comparison portals, for example, make it possible to compare large numbers of products and services and to select the best offer from them. At the same time, possible information asymmetries between companies and customers as well as between customer groups can be reduced, which makes it more difficult for companies to discriminate unfairly between customers. Greater market transparency can also lead to increased competition among companies, which in turn benefits consumers indirectly.

5. However, concerns have been expressed as well. From a competition policy point of view, it could potentially be problematic if algorithms are used to produce collusive market outcomes. There is, thus, reason to examine whether the competition rules are sufficient to protect undistorted competition, or whether additional regulatory measures are necessary to counter the increased risk of collusion.

6. In the following sections, the Monopolies Commission sets out its understanding of the characteristics of pricing algorithms (Section 2). It then proceeds to the question of how algorithms may contribute to the increased risk of collusive market outcomes (Section 3). As a next step, it turns to the question whether competition law enforcement is likely to effectively address collusive market outcomes brought about through the use of algorithms, and whether the rules for the competition law liability of collusion-external market participants need to be revisited (Section 4). The submission ends with the Monopolies Commission's policy recommendations (Section 5).

2 Characteristics of pricing algorithms

7. Algorithms are instructions in the form of program codes that can be used to solve certain problems. Algorithms map input values to deterministically or probabilistically determined output values. Deterministic means that input values are mapped to the output values according to clear specifications (true/false relationship), whereas probabilistic mapping also takes probabilities into account. Pricing algorithms thus enable more or less rule-based pricing. This requires a predefined target function that evaluates the data entered according to predefined or excluded rules.

8. Currently, static and, less frequently, dynamic algorithms are used for pricing. Algorithms are static if they follow an operation plan defined by a function for the execution of individual tasks, which is not changed after its creation. With dynamic algorithms, the operation plan is variable. However, the borderline between input

¹ This submission is based on the Monopolies Commission's XXIInd Biennial Report, Competition 2018, paras. 164 ff.

² EU Commission, Staff Working Document accompanying the Final Report on the E-commerce Sector Inquiry, document SWD (2017) 154 final of 10 May 2017, para. 149.

parameters and function is fluid. Algorithms can therefore, depending on the leeway granted to them, develop further or even completely circumvent the previously defined processes and not use parameters explicitly given to them. Furthermore, with self-learning pricing algorithms, the operation plans are not only variable, but also not necessarily interpretable by humans. Such algorithms may uncover patterns in data and find solutions independently instead of simply following pre-programmed rules. In particular, self-learning algorithms can develop other rules with which the same or an improved result may be achieved.³

9. An effective exclusion of certain rules is difficult or impossible, depending on the algorithm. A program code can also be changed in such a way that there is no practicable way to trace the code and thus the solution path (so-called "obfuscation"). This is the case in the present context of interest, for example, if pricing algorithms used in a cartel are programmed in such a way that the parties involved appear to set prices autonomously and thus the proof of concerted practice is made more difficult. This can lead to the situation that proving a cartel is close to impossible and/or possible only with considerable effort.

3 Algorithms may contribute to the increased risk of collusive market outcomes

10. Although there are many advantages associated with the use of modern algorithms for economic actors, modern algorithms may contribute to an increased risk of collusion.⁴

11. Collusion is typically understood as a market outcome in which competitors achieve higher profits than in competition through a form of coordination, for example by coordinating prices or quantities.⁵ Collusive behaviour occurs at the expense of consumers, because they have to pay higher prices, for example. Collusion is also undesirable in society as a whole, since the decline in consumer surplus is typically higher than the additional profits of companies.

12. Two types of collusion can be distinguished. In explicit collusion, competitors communicate directly with each other – e.g. in written or verbal form. In implicit collusion, the participants align their behaviour without direct communication.⁶ Both types of collusion are similarly harmful to welfare.

13. Algorithms can facilitate collusion because it can be expected that the use of algorithms has an influence on the frequency of price adjustments and on market transparency.

14. In markets with frequent interactions, companies can detect and sanction deviations from a desired collusive market outcome quickly. Markets in which companies can adjust their prices easily allow companies to react swiftly to possible deviations, which in turn reduces incentives to deviate. In digital markets, algorithms can be used to dynamically adjust prices very fast to the respective market conditions. This enables companies to react to

³ The use of self-learning algorithms is a feature of so-called artificial intelligence (AI); see dazu OECD (2017), Algorithms and Collusion: Competition Policy in the Digital Age, p. 8 ff., www.oecd.org/competition/algorithms-collusion-competition-policy-in-the-digital-age.htm, accessed on 18 August 2018.

⁴ OECD, *supra*; Ezrachi, A./Stucke, M. E., Virtual Competition, The Promise and Perils of the Algorithm-Driven Economy, Cambridge, Massachusetts 2016; Käseberg, T./von Kalben, J., Herausforderungen der Künstlichen Intelligenz für die Wettbewerbspolitik, Wirtschaft und Wettbewerb of 5 January 2018, p. 2-8; Gal, M. S./Elkin-Koren, N., Algorithmic Consumers, Harvard Journal of Law and Technology, 2017.

⁵ In addition to an coordination of prices and quantities, collusion can also lead to a division of markets in terms of geographical characteristics or customer groups. Ivaldi, M./Jullien, B./Rex, P./Seabright, P./Tirole, J., The Economics of Tacit Collusion, Final Report for DG Competition, European Commission, 2003, p. 58. http://ec.europa.eu/competition/mergers/studies_reports/the_economics_of_tacit_collusion_en.pdf, accessed on 18 August 2018.

⁶ Since implicit collusion does not require communication, the term collusion is sometimes perceived as misleading in this context. Some authors therefore propose to speak of implicit coordination instead. Ivaldi, M. et al., *supra*, p. 4 (fn. 2). The Monopolies Commission uses the more common term implicit collusion.

possible deviations in real time or even to anticipate them. The high speed of reaction prevents deviations from being profitable as they can be identified quickly.⁷

15. Transparent markets in which the behaviour of other companies can easily be observed make deviations less attractive. The use of algorithms can further increase the transparency of markets because algorithms are able to obtain information from very large amounts of data, which could not necessarily be obtained using conventional methods. Algorithms also make it possible to distinguish more reliably between intentional deviations from collusion and market-related adjustments (*e.g.* to fluctuations in demand) that would not result in sanctions by the other companies.⁸

16. In addition, other factors, such as the number of market participants, can likewise influence the possibility of collusion. For example, a larger number of companies involved makes collusion less likely because it is more difficult to make agreements and monitor their compliance. In general, collusion is therefore more likely in concentrated markets.⁹ That being said, algorithms allow companies to quickly analyze large amounts of data, which makes it easier to coordinate and monitor the behavior of a large number of companies. Therefore algorithms enable collusion, even in less concentrated markets.

17. With other factors important for collusion, it is not clear whether the use of algorithms can trigger further changes. For example, it is not clear how (pricing) algorithms influence the entry of new providers into a market. In general, low barriers to market entry make collusion difficult because new entrants either do not participate in the collusion, or the difficulties of coordination increase due to the higher number of companies involved. Algorithms can reduce barriers to entry if the opportunities and risks of market entry can be more easily assessed. On the other hand, it is conceivable that algorithms can also make market entries more difficult as entrants can be identified and fended off more quickly by established providers with the help of algorithms.¹⁰

18. Given the potential danger of algorithmic collusion, the question arises whether other market participants can develop counter measures. Some authors argue that consumers could use algorithms to at least partially offset the negative effects of collusion.¹¹ Under the heading "Algorithmic Consumers", there is a discussion about algorithms, including so-called digital assistants, which could observe prices for consumers in order to allow them to make better-informed purchasing decisions. Thus, consumers could use algorithms to avoid excessive prices or to bundle their buying power. However, the effectiveness of such market-based solutions seems at least questionable from today's perspective. The bottom line would be which side has access to better data and algorithms. In case of doubt, sellers are likely to be in a better position compared to consumers. Moreover, a coordinated consumer reaction seems difficult to implement because the number of consumers is usually significantly higher than that of companies, particularly in an oligopolistic market. Lastly, there is a risk that market-driven solutions may develop too late or not at all.

⁷ Federal Cartel Office/Autorité de la concurrence, Competition Law and Data, 10 May 2016, pp. 14-15 https://www.bundeskartellamt.de/SharedDocs/Publikation/DE/Berichte/Big%20Data%20Papier.pdf?__blob=publicationFile&v=2 accessed on 18 August 2018.

⁸ OECD, *supra*, p. 22.

⁹ In terms of cartels detected by the European Commission in the EU between 2001 and 2015, cartels consisted on average of seven companies. Hellwig, M./Hüschelrath, K., Cartel Cases and the Cartel Enforcement Process in the European Union 2001 – 2015: A Quantitative Assessment, ZEW Discussion Paper No. 16-063 of September 2016.

¹⁰ OECD, *supra*, p. 21.

¹¹ Gal, M. S./Elkin-Koren, N., Algorithmic Consumers, Harvard Journal of Law and Technology, 2017; see auch OECD, Directorate for financial and enterprise affairs – Competition Committee, Algorithms and Collusion – Note from the European Union, 21-23 June 2017, DAF/COMP/WD(2017)12, para. 31.

4 It may be difficult for competition law enforcement to effectively address collusive market outcomes brought about by algorithmic pricing

19. It is an open question whether competition law enforcement is able to effectively address collusive market outcomes brought about by algorithmic pricing, and whether competition rules properly reflect the role that collusion-external market participants play in producing collusive market outcomes.

4.1 The use of pricing algorithms does not require new rules (Articles 101-102 TFEU)...

20. Art. 101-102 TFEU do not contain a general prohibition of bringing about collusive market outcomes.¹² In order to establish such responsibility, the competition rules are always linked to market behaviour that is controllable by market participants and restrictive of competition. As far as pricing is concerned, the European Court of Justice has ruled that market behaviour only restricts competition if

„by the way in which they ac[t], the undertakings [...] eliminat[e] with respect to prices some of the preconditions for competition on the market which [stand] in the way of the achievement of parallel uniformity of conduct.“¹³

21. Hence, it is necessary to show that the undertakings concerned have participated in a commercial decision that leads to (implicitly or explicitly) coordinated market behaviour.¹⁴ That decision may be implemented using pricing algorithms and restrict competition by contributing to a collusive market outcome.

22. Where companies coordinate their market behaviour in that way, they violate the cartel prohibition of Art. 101 TFEU if their conduct reflects the joint intention to contribute to the common objectives pursued by all the participants (explicit collusion).¹⁵ If there is no joint intention, the companies can still violate Art. 102 TFEU if they are jointly dominant in a way allowing them to act as a collective entity, and if they collectively set “unfairly” inflated prices (implicit collusion). The price may be unfair either in itself or when compared to competing products.¹⁶

23. In this context, the market structure – and the likelihood that it produces so-called coordinated effects – is relevant as well. Coordinated effects can arise in markets where it is relatively simple to reach a common understanding on the terms of coordination and where that coordination is sustainable.¹⁷ In such a situation, companies may consider it possible, economically rational, and hence preferable, to adopt a course of action in

¹² See paras 11 ff. above; and EU Commission, Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements, OJ C 11 of 14 January 2011, p. 1, paras 65 ff.

¹³ See, among others, ECJ, Judgment of 14 July 1972, 48/69 – ICI, ECR 1972, 619, ECLI:EU:C:1972:70, para. 103.

¹⁴ Regarding the intentional nature of the behaviour, see ECJ, Judgment of 21 January 2016, C-74/14 – Eturas, ECLI:EU:C:2016:42, para. 45 (“requests it or [...] accepts it”); Judgment of 13 February 1979, 85/76 – Hoffmann-La Roche, ECR 1979, 461, ECLI:EU:C:1979:3685/76, para. 38-39 (“enables the undertaking [...] if not to determine, at least to have an appreciable influence”).

¹⁵ ECJ, Judgment of 8 July 1999, C-49/92 P – Anic Partecipazioni, ECR 1999, I-4125, ECLI:EU:C:1999:356, para. 87; Judgment of 21 July 2016, C-542/14 – VM Remonts, ECLI:EU:C:2016:578, para. 29.

¹⁶ Regarding the possibility to act as a collective entity, cf. ECJ, Judgment of 16 March 2000, C-395/96 P and C-396/96 P – Compagnie Maritime Belge Transports et al., ECR 2000, I-1365, ECLI:EU:C:2000:132, para. 41; Judgment of 31 March 1998, C-68/94 and C-30/95 – France and Société commerciale des potasses et de l’azote and Entreprise minière et chimique, ECR 1998, I-1375, ECLI:EU:C:1998:148, para. 221; regarding the condition of “unfairly” inflated prices, see ECJ, Judgment of 14 February 1978, 27/76 – United Brands, ECR 1978, 207, ECLI:EU:C:1978:22, para. 248/257. That being said, the conditions for an unfairly inflated price can also be determined in a way other than by the two-stage test mentioned above.

¹⁷ European Commission, Guidelines for the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings, OJ C 31 of 5 February 2004, p. 5, para. 39, 41; Guidelines for the assessment of non-horizontal mergers under the Council Regulation on the control of concentrations between undertakings, OJ C 265 of 18 October 2008, p. 6, paras 81, 119.

the market on a sustainable basis, aimed at selling at increased prices. Thus, parallel inflated pricing is, in principle, a behaviour that can be expected in a market structure that favours coordinated effects.¹⁸

24. However, in a market in which coordinated effects are likely, it is equally possible that any exchange of information can violate Article 101 TFEU. There are basically two reasons: First, subject to proof to the contrary, it can be presumed that the participants take the information exchanged with their competitors into account when determining their conduct on the market.¹⁹ Second, no competitive pressure exists that could hinder them from using information exchanges to align their conduct to each other.²⁰

25. In addition, in a market where coordinated effects are likely, companies may be able to artificially inflate prices further even without expressly exchanging information. This is because markets favouring coordinated effects are usually very transparent. In markets with these characteristics, companies may therefore violate Art. 102 TFEU by engaging in unilateral conduct that results in unfairly inflated prices.

26. In all the cases mentioned, however, price algorithms are only the instruments used to implement the companies' commercial decisions to – explicitly or implicitly – coordinate prices in the market. The companies' commercial decisions precede the use of pricing algorithms.

4.2 ... but algorithmic pricing does make it difficult to detect and pursue competition law violations

27. Detecting and pursuing competition law violations involving the use of algorithms is a very difficult task. This is mainly because, in the absence of an immunity application or complaints to the competition agency, the violation is merely reflected in the existence of a collusive market outcome. Agencies may have to compare pricing on different relevant geographic or product markets or at different points in time in order to uncover patterns or (conversely) anomalies that indicate a collusive market outcome.

28. As a subsequent step, detecting anticompetitive behavior requires agencies to link the underlying commercial decisions to the algorithmic prices in the market. Thus, companies may only be held liable for cartelization under Article 101 TFEU if it can be established that the companies agreed to use algorithms that were calibrated to reflect each others' prices, in line with what is indicated by the price patterns existing on the market. The use of dynamic or self-learning algorithms may require that the agencies investigate longer time periods preceding the price setting in order to establish potential cartel liability. For example, a user may have outlined the task for its IT service provider to design an algorithm with its own scope for action and (potentially) autonomous development. If the algorithm then adjusts its pricing to that of other companies, the scope granted to the algorithm may justify that the user of the algorithm is held liable as a cartel participant if the other companies subsequently agree to form a cartel.

29. In practice, making the link between a commercial decision and the algorithmic pricing in the market may be difficult. Digital markets tend to be highly dynamic and very transparent. This reduces the need to explicitly collude by forming a cartel below what is common in non-digital markets. At the same time, companies can adapt prices more quickly to changing market conditions than in non-digital markets. Consequently, there are more

¹⁸ This does not preclude the prohibition in principle of a merger that changes market conditions so that coordinated effects arise; see Art. 2 (3) Regulation 139/2004 on the control of concentrations between undertakings ("EC Merger Regulation"), OJ L 024 of 29 January 2004, p. 1; see also ECJ, Judgment of 10 July 2008, C-413/06 P – Bertelsmann and Sony Corporation of America/Impala, ECR 2008, I-4951, ECLI:EU:C:2008:392, paras 119-125 (on the previous regulation in Regulation 4064/89).

¹⁹ ECJ, Judgment of 8 July 1999, C-49/92 P – Anic Partecipazioni, ECR 1999, I-4125, ECLI:EU:C:1999:356, para. 121; Judgment of 8 July 1999, C-199/92 P – Hüls, ECR 1999, I-4287, ECLI:EU:C:1999:358, para. 162; Judgment of 21 January 2016, C-74/14 – Eturas, ECLI:EU:C:2016:42, para. 44.

²⁰ Regarding the relevant factors for the competitive assessment, see European Commission, Communication — Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements, OJ C 11, 14 January 2011, p. 1, paras 72 ff.

possibilities for companies to collude implicitly and to conceal this collusion using frequent price changes. This means that competition agencies have to be particularly vigilant of violations of Article 102 TFEU.

30. Competition agencies have faced similar challenges in the gasoline markets before. However, their track record of finding Article 101 TFEU or Article 102 TFEU violations on those markets is not encouraging. Indeed, the German Federal Cartel Office expressly noted in the final report of its fuel sector inquiry that “price abuse control [...] is hardly practicable in the case of petrol station prices because of the many price changes which occur over a 24-hour period.” The challenges for the agencies are even more complex in the digital area.

4.3 Is it necessary to revisit the rules for the competition law liability of collusion-external market participants?

31. The involvement of third parties in illegal collusion is particularly likely where pricing algorithms are used in the digital economy. On the one hand, platform operators are often intermediaries in the distribution of goods and services. On the other hand, the algorithms used to set prices for goods and services sold online are often not developed by the companies involved in sales, but are provided by IT service providers with special expertise. Existing competition law allows the attribution of infringements of the competition rules to third parties that

“participated actively and in full knowledge of the facts in the implementation or supervision of a cartel.”²¹

32. The attribution of competition infringements to platform operators through which other companies distribute the goods and services affected by the infringement does not pose any particular problems in that context. Platform operators that consciously and actively participate in a competition law violation involving pricing algorithms have a commercial interest in the market outcome.²² Thus, it appears appropriate that such platform operators are held liable for its participation in an agreement restricting competition or any other competition violation, subject to the non-existence of countervailing consumer benefits.

33. A more complicated situation exists in the case of IT service providers whose algorithms are used for collusive pricing. IT service providers are contractors who provide their pricing algorithms in a contractual exchange relationship. Such an IT service provider may sell a pricing algorithm that it knows or accepts could contribute to a collusive market outcome. However, the IT service provider is only interested in marketing the algorithm as an attractive product. It typically has no further interest in the profits associated with the collusion.

34. This circumstance cannot, however, be taken into account separately, especially within the framework of Art. 101 TFEU. Art. 101 TFEU merely provides for a uniform liability of all parties to an agreement restricting competition, without prejudice to the special interests of individual parties.²³ In the event that the commercial decisions implying the use of pricing algorithms are all made by the companies operating in the affected market, the IT service provider may be liable already if it provides the algorithm while being aware of and agreeing to the fact that later users can use the algorithm in the context of collusive pricing (= it acts, so to speak, as an “assistant”). Conversely, liability gaps can open up if the IT service provider knowingly sells a pricing algorithm producing a collusive market outcome and if the users of the algorithm do not know the other users and are not able to recognise the collusive market outcome themselves (= the IT service provider acts as an “indirect perpetrator”, so to speak). Thus, the liability of IT service providers under the existing competition rules appears to go either too far – in the scenario that the IT service provider acts as an “assistant” – or, conversely, not far enough – if it acts as an “indirect perpetrator” in cases in which the perpetrating companies cannot be held liable.

²¹ ECJ, Judgment of 22 October 2015, C-194/14 P – AC-Treuhand, ECLI:EU:C:2015:717, paras 26, 36.

²² See ECJ, Judgment of 21 January 2016, C-74/14 – Eturas, ECLI:EU:C:2016:42, paras 43-45.

²³ See ECJ, Judgment of 22 October 2015, C-194/14 P – AC-Treuhand, ECLI:EU:C:2015:717, paras 26, 35-36.

5 Monopolies Commission recommendations

35. The determination of collusive market outcomes is very important for consumer protection when pricing algorithms are used. Firstly, it cannot be ruled out from the outset that collusive price increases (or the associated consumer disadvantages) may be the result of a violation of the competition rules. Secondly, any collusive market outcome that arises determines the damage for which consumers can claim compensation in the event of a demonstrable infringement of competition law.

36. Protecting consumers against algorithmic collusion presupposes that such collusion is identified at all. In this respect, the competition agencies have more extensive investigative powers than private plaintiffs (e.g. consumer associations or individual consumers). The competition agencies continuously monitor market developments in order to identify anticompetitive practices and may conduct sector inquiries where reason exists to believe that competition may be restricted or distorted.²⁴ The agencies can carry out all investigations necessary to detect possible infringements of competition law and have very extensive powers of information.

37. However, antitrust market surveillance of algorithmic pricing may only be effective if all cases of potential collusion are investigated. It is not sufficient that only those cases are investigated in which the competition agencies decide that a closer investigation is warranted because collusive conduct may run afoul of the competition rules. That being said, it is not the job of competition agencies to prevent collusion-related prices as such and to skim off the resulting pecuniary advantage.²⁵ This is more in the interest of consumer associations, as collusive prices entail a corresponding consumer damage. The associations' interest is likely to increase with the number of suspected cases in which algorithm-based collusive pricing is suspected. Consideration should therefore be given to giving consumer associations the right to request an antitrust investigation into certain sectors where there is a suspicion of consumer-damaging collusion due to excessive prices. This should apply at least if the consumer associations would use the results of the sector inquiry to bring an action for damages or – in German law – for skimming off the pecuniary advantage in accordance with § 34a GWB.²⁶

38. A provision within the meaning of the previous paragraphs could be worded as follows:

„In the cases of [Art. 17 (1) Regulation 1/2003 and § 32e (1) GWB] it is sufficient that the presumption is asserted by a justified application of an institution within the meaning of [Art. 4 (3) Council Directive 2009/22/EC and § 4 UKlaG]. The application must state that in a particular economic sector consumer damages are likely to result from excessive prices and that the institution needs the results of the investigation to bring an action [for damages under national law/for benefit absorption under § 34a GWB]. Reasons shall be given in the event of a rejection of the application.“

The last sentence (p. 3) of the provision would clarify that the competition authority can reject the application, e.g. if the requirements for substantiating the application (p. 2 of the provision) are not fulfilled, where the competition authority has decided to initiate a separate procedure for the absorption of the pecuniary advantage (in German law: § 34 GWB) or where the effort of the sector inquiry is not proportional to the pecuniary advantage possibly obtained through collusion.

²⁴ Art. 17 VO 1/2003; § 32e GWB. The same applies under German law also in the case of justified suspicion of considerable, permanent or repeated violations of consumer law regulations, e.g. those which concern the exploitation of information advantages vis-à-vis consumers (§ 32e (5) GWB).

²⁵ This is not precluded by the fact that the German competition authorities can order the absorption of the economic advantage that companies have obtained from an infringement of the competition rules in accordance with § 34 GWB. The provision does not play any role in practical competition law enforcement.

²⁶ Under German law, consumer associations are only entitled to siphon off the pecuniary advantage obtained by companies through a violation of Art. 101-102 TFEU or German competition law, but cannot assert any further consumer damage.

39. The Monopolies Commission is aware of a current international discussion about introducing a farther-reaching special regulation of pricing algorithms.²⁷ However, it should be borne in mind that, notwithstanding the collusion risks involved, pricing algorithms have so far only played a very isolated role in the context of on-file competition law violations. Furthermore, it is not clear that agency and civil enforcement of competition rules will be insufficient to protect consumers from collusive disadvantages arising from the use of pricing algorithms in the future. That being said, legal intervention could adversely affect market development if it acts as a deterrent to the further development of digital pricing tools.

40. Therefore, additional legislative measures should only be considered if, during the monitoring of market developments, concrete evidence emerges that the use of pricing algorithms furthers collusive market outcomes to a significant extent and that the enforcement of competition rules is permanently inadequate to protect consumers from such damage. In such circumstances, EU-wide regulation should be considered that would extend the rebuttable presumption of cartel damages under Directive 2014/104/EU and the German implementing provision in Section 33a(2) GWB to all cases in which pricing algorithms are used for infringements of competition law. Such a provision would not change the competition rules, but would reverse the burden of proof that violations of the competition rules have led to collusive price increases resulting in a consumer damage.

41. In addition, the Monopolies Commission considers it sensible to consider supplementary rules on the responsibility of third parties who, by contributing their IT expertise to algorithmic pricing, make an independent contribution to such collusive market outcomes for which liability under the competition rules is possible. Responsibility should be structured in such a way that the liability of those third parties does not depend on the behaviour of the users of the algorithm, but exclusively on their own behaviour. IT service providers could, thus, be induced to refrain from a collusion-promoting design of the algorithm or to change or disable algorithms in which competition problems only become apparent during their use in order to reduce their own liability risks.

42. It must be pointed out, however, that a more far-reaching problem lies behind these considerations, as the overall liability of third parties is only partially regulated.²⁸ Apart from the responsibility of IT service providers for the pricing algorithms they provide, liability gaps can also arise, for example, if consultants or other companies not themselves active on the relevant market cause collusion among the companies operating there without these knowing of potential violations. Therefore, the Monopolies Commission recommends that the liability of companies which are not themselves directly active in collusion on the relevant market should be reviewed fundamentally. The aim should be to supplement the existing incomplete liability regime under Art. 101-102 TFEU for all relevant third parties in a coherent manner.

²⁷ See, e.g., OECD (2017), *Algorithms and Collusion: Competition Policy in the Digital Age*, section 5-6, www.oecd.org/competition/algorithms-collusion-competition-policy-in-the-digital-age.htm, accessed on 18 August 2018.

²⁸ See paras 33-34 above.