



GCR INSIGHT

E-COMMERCE COMPETITION ENFORCEMENT GUIDE

THIRD EDITION

Editor

Claire Jeffs

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Publisher's Note

E-commerce has changed our homes – replacing books, CDs, DVDs and satellite dishes with downloads and streaming; automobiles with app-hailed rides; shopping bags with postal delivery boxes. It is changing our language too, adding terms such as 'phygital' for blending online and offline business. Yet, as noted by Claire Jeffs, Nele Dhondt and Jack Dickie in their introduction, competition authorities are evolving their existing tools to address e-commerce, not revolutionising how they apply antitrust law. Practical guidance for both practitioners and enforcers in navigating this challenging environment is critical.

This third edition of the *E-Commerce Competition Enforcement Guide* – published by Global Competition Review – provides such detailed guidance and analysis. It examines both the current state of law and the direction of travel for the most important jurisdictions in which international businesses operate. The Guide draws on the wisdom and expertise of distinguished practitioners globally, and brings together unparalleled proficiency in the field and provides essential guidance for all competition professionals.

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PART I

EUROPE

Algorithmic Pricing: Candidate for the New Competition Tool?

Ingrid Vandenborre and Michael J Frese¹

Introduction

Algorithmic pricing remains an antitrust hot button.² On the one hand, the use of pricing algorithms makes markets more efficient, e.g., by enabling sellers to understand and react swiftly to fluctuations in market demand and changes in supply conditions. On the other hand, algorithms provide elevated pricing transparency that, depending on the sophistication of the algorithm, may facilitate anticompetitive practices.

There have been a number of recent cases that address practices involving the use of a pricing algorithm where the pricing algorithm constituted one element in a broader anticompetitive strategy that included express communications among the participants. Questions about the legality of pricing algorithms outside this context are essentially about the enforcement framework for parallel conduct, or tacit collusion, and practices or tools that facilitate price transparency. It is noteworthy in this respect that the European Commission (the Commission) is in the process of assessing the need for the creation of a ‘new competition tool’ to address

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- 1 Ingrid Vandenborre is a partner and Michael J Frese is an associate at Skadden, Arps, Slate, Meagher & Flom LLP.
 - 2 Various papers have been published on this topic, including by the ICN, OECD, European Commission, the German and French competition authorities, the Portuguese competition authority, as well as the UK competition authorities. See: The impact of digitalization in cartel enforcement (ICN, 28 April 2020); Algorithms and Collusion: Competition Policy in the Digital Age (OECD, 2017); Algorithms and Collusion (Note from the European Union, 21-23 June 2017); Joint study on algorithms and competition by the French Autorité de la concurrence and the German Bundeskartellamt (November 2019), Monopolkommission, XXIII Biennial Report (2020); Digital ecosystems, Big Data and Algorithms (Autoridade da Concorrência, July 2019); Pricing algorithms: Economic working paper on the use of algorithms to facilitate collusion and personalised pricing (CMA, 8 October 2018); Unlocking digital competition – Report of the Digital Competition Expert Panel (March 2019); Personalised Pricing for Communications (Ofcom, 4 August 2020).

potential enforcement gaps in digital and other markets. Oligopolistic market structures featuring increased transparency due to algorithm-based technological solutions are identified by the Commission as among the perceived gap areas identified in this context.³

This chapter takes stock of the debate around price algorithms and the perceived enforcement gap. We discuss what is understood by algorithmic pricing and the effects it may have, how this pricing technique has come up in recent investigations, what are the conditions under which algorithmic pricing may result in an antitrust violation, and what enforcement gaps may exist. We end with some concluding remarks on how to address potential antitrust risk.

What is algorithmic pricing?

Almost every company will determine prices for its products and services based on observed market conditions, and many rely on a variety of tools to guide their decisions (e.g., market reports, customer surveys, price tracking data). A pricing algorithm is one such tool. It determines the price a seller has to charge to achieve a predefined objective.

Algorithmic pricing is a software tool sellers can use to price their products. It can crawl the web and perform complex calculations and data-processing functions that could be costly to execute for human beings.⁴ It helps suppliers to dynamically adjust prices based on various conditions. This may include a company's own confidential information (e.g., inventory, cost base) as well as other observable information (e.g., competitors' prices, demand fluctuations). Both the input variables and the processing capabilities vary across algorithms. Price algorithms may also be used to determine personalised prices for different types of customers.⁵ For completeness, we would point out that there are also pricing algorithms that can be used by buyers, for example, price-tracking and price-forecasting websites and apps recommending when to buy and from whom.⁶

Algorithmic pricing has been used in the airline industry for decades. The hospitality and financial industries have also been making use of pricing algorithms for a number of years.⁷ With the rise of e-commerce, dynamic pricing and pricing algorithms are becoming more common in retail markets as well. Indeed, these software tools are easily accessible, even for small businesses that can use off-the-shelf solutions.⁸

3 European Commission's Inception impact assessment, available at: <https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12416-New-competition-tool>.

4 See also *Algorithms and Collusion: Competition Policy in the Digital Age* (OECD, 2017), p. 9.

5 Algorithms have many more commercial applications, including offering a personalised product selection, auctioning online advertising slots, and price tracking services. For a detailed discussion we refer to the Joint Study on Algorithms and Competition by the French Autorité de la concurrence and the German Bundeskartellamt (November 2019).

6 *Algorithms and Collusion* (Note from the European Union, 21-23 June 2017), p. 8. See also: *Algorithms and Collusion: Competition Policy in the Digital Age* (OECD, 2017), p. 18: 'The development of algorithms has improved the ability to offer price comparison services either via search engines or comparison platforms. Price comparison websites (PCW) make it easier for consumers to compare the available offers and find the best alternative. Comparison platforms can also contribute to level the playing field and intensify competitive pressure.'

7 Emilio Calvano, Giacomo Calzolari, Vincenzo Denicolò and Sergio Pastorello, 'Algorithmic Pricing: What Implications for Competition Policy?', *Review of Industrial Organization* (2019) 55:155–171, 156.

8 Emilio Calvano, Giacomo Calzolari, Vincenzo Denicolò and Sergio Pastorello, 'Algorithmic Pricing: What Implications for Competition Policy?', *Review of Industrial Organization* (2019) 55:155–171, 156.

Despite the increased application of pricing algorithms, the number of companies that have fully automated their price-setting practices seems modest. Based on the Commission e-commerce sector inquiry, 515 of the 1051 surveyed retailers track online prices of competitors and 343 those 515 retailers also use software programs for that purpose. While most of these 343 retailers (78 per cent) understandably adjust their own prices to those of their competitors, only 8 per cent (27 retailers) exclusively use automatic price adjustments.⁹ These percentages are in line with a more recent survey by the Portuguese competition authority.¹⁰

Price algorithms can have both pro- and anticompetitive effects. By using algorithmic pricing, a seller is able to optimise its pricing decisions and adjust more intelligently and rapidly to market dynamics. As noted by the OECD, '[d]ynamic pricing algorithms have been recognised to improve market efficiency, by allowing companies to react instantaneously to changes in supply conditions – such as stock availability, capacity constraints or competitors' prices – as well as to fluctuations in market demand.'¹¹ However, use of pricing algorithms by sellers could also result in supra-competitive prices, whether by reinforcing a cartel agreement or – at least theoretically – by influencing pricing decisions between companies that take ostensibly unilateral pricing decisions.¹² With respect to the former scenario, price algorithms may make it easier to detect and respond to deviations from an agreed price.¹³ The latter scenario (i.e., influencing ostensibly unilateral pricing decisions) occurs where competitors use the same (third party) price algorithm or data pool, where pricing algorithms are programmed to signal and respond to pricing decisions, or where algorithms can learn autonomously that a coordinated outcome is in the users' joint interest.¹⁴ However, for each of these situations, the likelihood of a collusive pricing is dependent on very specific conditions, for example, wide adoption by sellers of the same algorithm, a certain level of sophistication and data access, and no buyer algorithms that frustrate the stable collusion.

In sum, pricing algorithms are becoming a conventional tool in e-commerce, enabling sellers and buyers to make more informed pricing decisions. Apart from their pro-competitive effects, in select cases they may also carry anticompetitive risk.

9 Commission Staff Working Document accompanying the Commission's Final report on the E-commerce Sector Inquiry [COM(2017) 229 final] 603-605.

10 Digital ecosystems, Big Data and Algorithms (Autoridade da Concorrência, July 2019). It should be noted that the results in the survey by the Autoridade da Concorrência are based on a small sample.

11 *Algorithms and Collusion: Competition Policy in the Digital Age* (OECD, 2017), p. 16. See also *Pricing algorithms: Economic working paper on the use of algorithms to facilitate collusion and personalised pricing* (CMA, 8 October 2018), 4.2-4.4.

12 See, e.g., *Pricing algorithms: Economic working paper on the use of algorithms to facilitate collusion and personalised pricing* (CMA, 8 October 2018), 5.2.

13 See, e.g., *Pricing algorithms: Economic working paper on the use of algorithms to facilitate collusion and personalised pricing* (CMA, 8 October 2018), 5.7-5.9.

14 See Ariel Ezrachi and Maurice Stucke, 'Artificial Intelligence & Collusion: When Computers Inhibit Competition', *University of Illinois Law Review* (2017) and the discussion of this article in *Pricing algorithms: Economic working paper on the use of algorithms to facilitate collusion and personalised pricing* (CMA, 8 October 2018), 5.15-5.24.

Investigations concerning algorithm pricing

A number of recent cases have highlighted that the use of pricing algorithms could trigger anti-trust investigations. We discuss the relevant cases below.¹⁵

Horizontal cases

Hardcore violation

On 12 August 2016, the United Kingdom's Competition and Markets Authority (CMA) adopted a decision in which it found that Trod Limited (Trod) and GB eye Limited (GBE) had infringed the Chapter I prohibition (the UK equivalent of Article 101 TFEU) by agreeing to not undercut each other's retail sales on Amazon UK for products that Trod purchased from GBE on wholesale level, notably sport and entertainment posters and frames, as well as posters and frames sourced from a common supplier.¹⁶ The collusive arrangement originated from complaints made by Trod that GBE was undercutting Trod on the retail market. In order to settle the dispute, the companies agreed that they would not undercut each other's prices for products sold on Amazon UK. After a short period of monitoring and changing their prices manually, GBE decided to use repricing software to implement the arrangement. The companies adopted distinct software for the implementation of the anticompetitive agreement and engaged in numerous discussions on the appropriate configuration. GBE's software was configured to undercut competing products on Amazon UK, except for the products on which it competed with Trod, in which case Trod's price would be matched unless there was a cheaper third-party seller on Amazon UK. Trod, on the other hand, adopted repricing software that was configured not to undercut GBE on Amazon UK. The CMA concluded that this formed hardcore cartel activity.

Justifiable by-object restriction

In contrast, competition authorities have also recognised that coordination on the use of a pricing algorithm may come with consumer benefits, for example, when part of a common platform. On 7 June 2018, following a complaint, the Luxembourg Competition Authority (LCA) adopted a decision exempting the algorithmic price-fixing arrangement of Webtaxi, a booking platform for taxi services in Luxembourg, from the prohibition of the national equivalent of Article 101 TFEU.¹⁷ Taxis belonging to several companies made use of the booking platform, which fixed the fares for the participating taxis with the help of price algorithm. The LCA concluded that this arrangement qualified as a by-object restriction but went on to assess the claimed justifications. The LCA found that the fixed fares came with various benefits for the participating taxis, consumers and the environment. With respect to consumer benefits, the LCA assessed the algorithm and concluded that algorithm-based fares would always be equal to or lower than the meter price as the algorithm used a digressive price per kilometre. In addition,

15 Although outside the scope of this article, we would point out that there has also been enforcement activity against non-pricing algorithms, e.g., market sharing arrangements that are implemented through algorithms, see the UK's Office of Gas and Electricity Markets (Ofgem) 26 July 2019 decision regarding Economy Energy, EGEL and Dyball.

16 Case 50223 Online sales of posters and frames, 12 August 2016. The CMA investigation followed similar investigations by the US DoJ in *U.S. v. Daniel William Aston and Trod Limited* (2016) and *U.S. v. David Topkins* (2015).

17 Decision 2018-FO-01 of 7 June 2018.

the LCA found that Webtaxi's per-kilometre price was lower than that of its direct competitors. Given that Webtaxi's estimated market share was only 26 per cent, the algorithm did not remove price competition in the market. Together with the benefits for the taxis and the environment, the LCA concluded that the restriction was justified.

Ongoing investigations

There are also ongoing investigations. For example, the Spanish competition authority (CNMC) has opened an investigation into anticompetitive agreements in the real estate intermediation market.¹⁸ The CNMC is investigating whether this coordination was implemented by means of software and digital platforms and is exploring whether the conduct has been facilitated by IT firms offering real estate brokerage software and algorithms.

Vertical cases

On 24 July 2018, the Commission fined four hardware producers for engaging in a by object violation under Article 101(1) TFEU by restricting the ability of online retailers to determine their resale prices independently.¹⁹ Pricing software played a prominent role at least in some of these cases. In the *Asus* case, price-comparison websites and price-monitoring software were used by Asus to identify retailers pricing below the recommended resale price. In case of failure to observe the minimum prices, Asus would contact the retailer by email or phone and threaten or even penalise it with penalties such as supply cuts, bonus cuts, exclusion from certain partner programmes and prohibition to use the Asus logo online. In the *Pioneer* case, dealers used software programs to track the prices online and automatically adjust to match the lowest price available online. Pioneer used this to take steps against the retailer that first set the lower price.

On 1 August 2019, the CMA adopted a decision finding that Casio UK had infringed the Chapter I prohibition or Article 101 TFEU or both by entering into a resale price maintenance (RPM) agreement with at least one of its main resellers to prevent the advertising or selling of digital pianos and keyboards below the prices specified by Casio UK.²⁰ The CMA found that the agreement was monitored including by means of internet searching and software that provided reports based on automated searching. Automated price-monitoring software played a similar role in the parallel CMA investigations against other musical instrument manufacturers.²¹

These horizontal and vertical cases demonstrate that the use of pricing algorithms may amount to a violation of Article 101 TFEU when they are used to facilitate or implement anti-competitive arrangements.

18 https://www.cnmc.es/sites/default/files/editor_contenidos/Notas%20de%20prensa/2020/2020219%20NP%20Intermediation%20Market%20EN.pdf.

19 Case AT.40181 – *Philips*, Decision of 24 July 2018; Case AT.40182 – *Pioneer*, Decision of 24 July 2018; Case AT.40465 – *Asus*, Decision of 24 July 2018; Case AT.40469 – *Denon & Marantz*, Decision of 24 July 2018.

20 Online resale price maintenance in the digital piano and digital keyboard sector (1 August 2019).

21 Online resale price maintenance in the synthesiser and hi-tech sector (29 June 2020); Online resale price maintenance in the electronic drum sector (22 July 2020).

The key conditions under Article 101 TFEU

The cases described above fit squarely within the existing legal framework, notably Article 101 TFEU, which prohibits 'all agreements between undertakings, decisions by associations of undertakings and concerted practices which may affect trade between Member States and which have as their object or effect the prevention, restriction or distortion of competition within the internal market, and in particular those which: (a) directly or indirectly fix purchase or selling prices...' This section sets out the general framework for assessing pricing algorithms, with a particular focus on horizontal situations.

Agreements between undertakings, decisions by associations of undertakings and concerted practices

Article 101 TFEU is premised on the idea that pricing decisions can only be prohibited if there is some form of agreement or cooperation between at least two companies. This applies both in horizontal and vertical relations.²² An 'agreement' requires the expression of the concurrence of wills of at least two parties,²³ that is to say, an expression of an intention to conduct themselves on the market in a specific way.²⁴ A 'concerted practice' refers to practical cooperation in the sense of direct or indirect contact, the object or effect whereof is either to influence or disclose past or future market conduct in such a way as to create conditions of competition that do not correspond to the normal conditions of the market.²⁵ These conditions are based on 'the concept inherent in the provisions of the Treaty relating to competition, according to which each economic operator must determine independently the policy which he intends to adopt on the market'.²⁶

Importantly, the CJEU has clarified that this 'requirement of independence does not deprive economic operators of the right to adapt themselves intelligently to the existing and anticipated conduct of their competitors'.²⁷ Similarly, in the *Del Monte* case, the General Court referred to 'the necessary distinction between, on the one hand, competitors gleaning information independently or discussing future pricing with customers and third parties and, on the other hand, competitors discussing price-setting factors and the evolution of prices with other competitors before setting their quotation prices'.²⁸ It follows that there needs to be some form of cooperation between the participants for an alleged 'agreement' or 'concerted practice' to exist.

This framework raises the question of whether an agreement or concerted practice may be inferred from parallel conduct based on price algorithms.

22 With respect to horizontal relations, the reason for said distinction is the assumption that price alignment on X will be difficult to reach and sustain without coordination. An agreement could solve this issue, which is why any such agreement should not be enforceable. Similarly, exchanges of information could build trust necessary to reach and maintain a supra-competitive price (in a world of unenforceable agreements), which is why information exchanges may also be prohibited under certain conditions.

23 See e.g. Case C-194/14 P *AC Treuhand v. Commission*, para. 28.

24 Proof of a joint intention to pursue an anticompetitive aim is not necessary. See Case T-168/01 *GlaxoSmithKline Services Unlimited v. Commission*, paras. 76-77.

25 See e.g. Case C-49/92 P *Commission v. Anic Partecipazioni*, para. 117

26 Case C-49/92 P *Commission v. Anic Partecipazioni*, para. 116

27 Case C-49/92 P *Commission v. Anic Partecipazioni*, para. 117

28 Case T-587/08 *Del Monte Produce v. Commission*, para. 344.

In the *ICI* case, concerning price increases applied by manufacturers in different national markets at the same time or within a short period of time, the CJEU held that:

*Although parallel behaviour may not by itself be identified with a concerted practice, it may however amount to strong evidence of such a practice if it leads to conditions of competition which do not correspond to the normal conditions of the market, having regard to the nature of the products, the size and number of the undertakings, and the volume of the said market.*²⁹

The more recent *Eturas* case sets out the conditions under which users of a common online sales platform can be held liable for collusive pricing.³⁰ This case concerned a commercial online booking platform for licensed travel agents. The platform administrator had sent a message to the travel agents, via the platform's personal electronic mailbox, informing them that the discounts on products sold through the system would be capped. Following the dissemination of that message, the system underwent the technical modification necessary to implement that measure. In that context, the CJEU had to determine under what conditions the travel agents could be held liable. The CJEU held that:

*[I]f it cannot be established that a travel agency was aware of that message, its participation in a concertation cannot be inferred from the mere existence of a technical restriction implemented in the system at issue in the main proceedings, unless it is established on the basis of other objective and consistent indicia that it tacitly assented to an anticompetitive action.*³¹

It follows from *ICI* and *Eturas* that parallel conduct as a result of price algorithms is not sufficient in and of itself to establish liability under Article 101 TFEU.³²

This interpretation is confirmed by the *VM Remonts* case. This case concerned a situation of collusive tendering and raised the question of under what conditions an undertaking may be held liable for a concerted practice on account of the acts of an independent service provider.³³ A subcontractor for a legal service provider to one of the bidders had also worked on the bids for the other companies and had used one of the draft bids as a reference point. The CJEU concluded that 'the concerted practice involving that [independent service] provider may be attributed to the undertaking using that provider's services only under certain conditions.'³⁴ That is the case 'when that undertaking intended, through the intermediary of its service provider, to disclose commercially sensitive information to its competitors, or when it expressly or tacitly

29 Case 48/69 *Imperial Chemical Industries v. Commission*, paras. 65-67.

30 See also the *Spanish Cigarette* case, in which the CNMC concluded that tobacco companies granted each other access to sales figures through a distributor's software platform, see: <https://www.cnmc.es/en/node/374435>.

31 Case C-74/14 *Eturas*, para. 44.

32 Cf. *Algorithms and Collusion* (Note by the United States, 21-23 June 2017): 'Absent concerted action, independent adoption of the same or similar pricing algorithms is unlikely to lead to antitrust liability even if it makes interdependent pricing more likely.'

33 Case C-542/14 *VM Remonts*.

34 Case C-542/14 *VM Remonts*, para. 28.

consented to the provider sharing that commercially sensitive information with them³⁵ or ‘if [the undertaking using those services] could reasonably have foreseen that the service provider retained by it would share its commercial information with its competitors’.³⁶ However, ‘the condition is not met when that service provider has, without informing the undertaking using its services, used the undertaking’s commercially sensitive information to complete those competitors’ tenders.’³⁷

It follows that information exchange between competitors through a common agent can only be considered under Article 101 TFEU if there is an indication of intent or awareness on the part of the competitor that the common agent will share this information. This confirms that the mere use of a (platform or operator that applies a) pricing algorithm will not be sufficient; it would have to be established that the user intended or was aware of an anticompetitive purpose (e.g., to coordinate with other users or facilitate their coordination).

With respect to the liability of the third-party service provider itself, *AC-Treuhand* is the benchmark case and informative for purposes of assessing the framework for liability of an independent operator of algorithm-pricing software.³⁸ This case concerns the liability of a consultancy firm for organising and actively participating in a number of meetings of the *Heat Stabilizers* cartel, for example, by collecting and supplying the producers with sales data. The CJEU held that the terms ‘agreement’ and ‘concerted practice’ do not ‘presuppose a mutual restriction of freedom of action on one and the same market on which all the parties are present’.³⁹ It found that *AC-Treuhand* could be held liable even though it had not restricted its own commercial activities. On this basis, third-party software providers or common platforms likely would not be excluded from potential liability for antitrust infringement in the case of coordination between their customers or members based on the pricing algorithm they adopt or provide. However, intent or awareness is a precondition for liability, also for third-party service providers and platforms. In this respect, the CJEU held that ‘the very purpose of the services provided by *AC-Treuhand* on the basis of service contracts concluded with those producers being the attainment, in full knowledge of the facts, of the anticompetitive objectives in question’.⁴⁰

Which have as their object or effect the prevention, restriction or distortion of competition

Even if the use or supply of pricing algorithms can be properly qualified as agreement or concerted practice, it will only fall within the scope of Article 101(1) TFEU if it restricts competition. More specifically, use of the algorithm needs to have as its object or effect a restriction of competition. In both cases, the legal and economic context in which the algorithm is deployed needs to be assessed.⁴¹ The parties’ intention is not decisive but can be taken into account.

35 Case C-542/14 *VM Remonts*, para. 30.

36 Case C-542/14 *VM Remonts*, para. 31.

37 Case C-542/14 *VM Remonts*, para. 30.

38 Case C-194/14 P *AC-Treuhand*.

39 Case C-194/14 P *AC-Treuhand*, para. 33.

40 Case C-194/14 P *AC-Treuhand*, para. 38.

41 Case T-168/01 *GlaxoSmithKline Services Unlimited v. Commission*, para. 110.

In some circumstances, use of a pricing algorithm may be properly qualified as by object restriction. In these situations no actual anticompetitive effects would have to be established. The conditions for finding a by object restriction have been set out in *Cartes Bancaires*.⁴² It is only when a type of coordination between undertakings reveals a sufficient degree of harm to competition that a finding of by object restriction is warranted. This requires the type of coordination to be so likely to have negative effects (e.g., on price) that it would be redundant to assess actual effects on the market. An agreement may be regarded as having an anticompetitive object even if it does not have a restriction of competition as its sole aim but also pursues other legitimate objectives.⁴³ An agreement whereby different sellers agree to fix their prices as determined by a price algorithm will normally qualify as a by object restriction (cf. *Trod* and *Webtaxi*).⁴⁴

Absent a collusive agreement or joint price setting that is implemented through or with the use of an algorithm, or another basis to identify a restriction by object, it would thus be necessary to assess the actual effects that stem from using a price algorithm. Indeed, use of a pricing algorithm without intentional coordination may have similar implications as a sophisticated information exchange mechanisms. And in accordance with the Guidelines on Horizontal Co-Operation Agreements, by-object treatment of information exchange should normally be limited to 'individualised data regarding intended future prices or quantities'.⁴⁵ For most price algorithms, this condition will not be fulfilled.

A by-effect infringement requires competition to have been restricted to an appreciable extent. This appreciable restriction must be assessed against the competition that would have occurred in the absence of the restriction.⁴⁶ The Commission Guidelines on horizontal cooperation agreements provide helpful guidance:

42 Case C-67/13 P *Groupement des Cartes Bancaires v. Commission* ('*Cartes Bancaires*'), paras. 51-52. See also Case C-307/18 *Generics (UK) Ltd et al v. Commission*, para. 67.

43 Case C-209/07 *Competition Authority v. Beef Industry Development Society* ('*BIDS*'), para. 21.

44 Cf Case 48/69 *Imperial Chemical Industries v. Commission*, para. 118: 'Although every producer is free to change his prices, taking into account in so doing the present or foreseeable conduct of his competitors, nevertheless it is contrary to the rules on competition contained in the Treaty for a producer to cooperate with his competitors, in any way whatsoever, in order to determine a coordinated course of action relating to a price increase and to ensure its success by prior elimination of all uncertainty as to each other's conduct regarding the essential elements of that action, such as the amount, subject-matter, date and place of the increases.' See also Commission Decision No. 73/212 of 11 May 1973 in case IV/791 *Société Commerciale des Potasses et de l'Azote (SCPA) and Kali und Salz* (formerly VDK), concerning the outsourcing of pricing decision to a joint agent, in which the Commission concluded that the appointment of a joint selling agency constituted a restriction of competition 'in so far as it involves or causes joint fixing of the quantities and qualities of potassium products to be exported by each undertaking and the coordination of deliveries and distribution within the common market of products from the two undertakings'.

45 See Commission Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements, OJ 14.1.2011, C 11/1 ('*Guidelines on Horizontal Co-Operation Agreements*'), paras. 73-74.

46 Case C-307/18 *Generics (UK) Ltd et al v. Commission*, paras. 117-118. See also Case C-382/12 P *MasterCard*, para. 161.

*it is important to assess the restrictive effects of the information exchange in the context of both the initial market conditions, and how the information exchange changes those conditions. ... It will also be necessary to examine the frequency of the information exchanges, the type of information exchanged ... and the importance of the information for the fixing of prices ...*⁴⁷

However, the Commission also takes the view that '[i]n general, exchanges of genuinely public information are unlikely to constitute an infringement of Article 101',⁴⁸ noting that '[f]or information to be genuinely public, obtaining it should not be more costly for customers and companies unaffiliated to the exchange system than for the companies exchanging the information.'⁴⁹

These distinctions are equally relevant for pricing algorithms. To establish anticompetitive effects it would have to be established, at the very least, that the algorithm makes use of price-sensitive information (e.g., real-time competitor prices or other price-sensitive data points) that is not generally available, including through other market-monitoring tools.

We discuss below the difficulties that exist in establishing anticompetitive effects outside of a collusive arrangement, arising from the mere use of an algorithm without an intention to collude.

Enforcement gaps?

The discussion of the limitations of antitrust enforcement, and the possible pro- and anti-competitive effects from the application of pricing algorithms inevitably raises the question of whether the emergence of pricing algorithms requires legislative change. The Commission's consultation on a new competition tool should be seen in that context.

There has been an intense debate about whether pricing algorithms make collusive outcomes easier to sustain (i.e., without human communication) and thus warrant a more interventionist approach.⁵⁰ Although there is some economic research, based on stylised assumptions, which lends some support to these concerns,⁵¹ no consensus view has emerged that effective collusion can occur without any form of communication (at a minimum on the algorithm that will be used).⁵² In any event, this seems to remain a hypothetical scenario, as no real world examples have yet been identified.⁵³

47 Guidelines on Horizontal Co-Operation Agreements, para. 76.

48 Guidelines on Horizontal Co-Operation Agreements, para. 92. See, however, Case T-587/08 *Del Monte Produce v. Commission*, para. 369, where the General Court held that the fact the certain information could be obtained from other sources is not relevant as 'the exchange system established enabled the undertakings concerned to become aware of that information more simply, rapidly and directly'.

49 Guidelines on Horizontal Co-Operation Agreements, para. 92.

50 See e.g. *Algorithms and Collusion: Competition Policy in the Digital Age* (OECD, 2017), p. 20.

51 See e.g. Emilio Calvano, Giacomo Calzolari, Vincenzo Denicolò and Sergio Pastorello, 'Algorithmic Pricing: What Implications for Competition Policy?', *Review of Industrial Organization* (2019) 55:155–171.

52 See also: Joint Study on Algorithms and Competition by the French Autorité de la concurrence and the German Bundeskartellamt (November 2019), pp. 42–52; *Pricing algorithms: Economic working paper on the use of algorithms to facilitate collusion and personalised pricing* (CMA, 8 October 2018), paras. 8 and 5.18.

53 See also Joint Study on Algorithms and Competition by the French Autorité de la concurrence and the German Bundeskartellamt (November 2019), p. 42.

Below we provide some observations on this subject based on the research and commentaries undertaken.

First, there are a variety of pricing algorithms and each needs to be assessed on its own merits. In fact, only some are able to reach a collusive outcome without communication. As explained by Calvano et al., '[a]daptive algorithms cannot collude unless they are designed by their programmers to do so. But if this is so, then the programmers must solve exactly the same coordination problems as human price makers.'⁵⁴

Second, the real world situations in which a pricing algorithm (of the correct type) could realistically result in a collusive price would seem to be very specific. As the Commission has rightly pointed out: 'algorithms do not remove the need for some of the basic conditions for tacit collusion.'⁵⁵ This normally requires homogeneous products (not only in terms of product features but in terms of delivery time, consumer loyalty, etc.), as well as comparable cost levels, capacity utilisation ratios and market shares.⁵⁶ And, even if all these conditions are satisfied, it would only work in markets that are not characterised by hidden price negotiations, (algorithm-based) personalised pricing,⁵⁷ or (algorithm-based) selective product exhibition. Few markets will have all these features.⁵⁸ Moreover, any attempt by the algorithm to collude may be frustrated by consumer algorithms, which may take over purchase decisions possibly on behalf of groups of consumers with similar preferences.⁵⁹

Third, the incremental harm of pricing algorithms may be limited. The 'game changer' with pricing algorithms is that rivals' prices could be matched in minutes (as opposed to hours or days), which reduces the gains of cheating and stabilises the collusive equilibrium.⁶⁰ But this assumes high-volume trading within hours (or days) of the price change. For all other markets, cheating may be less worthwhile anyway and an algorithm is less likely to make the difference. This raises the question: for which algorithm collusion-prone markets does this really matter?

Fourth, the users of the algorithm would need to commit to price adjustments based on competitors' prices. Based on recent surveys by the Commission and the Autoridade da Concorrência, it is not obvious that many users currently do so given that only a few have fully

54 Emilio Calvano, Giacomo Calzolari, Vincenzo Denicolò and Sergio Pastorello, 'Algorithmic Pricing: What Implications for Competition Policy?', *Review of Industrial Organization* (2019) 55:155–171, 159.

55 *Algorithms and Collusion* - Note from the European Union, 21-23 June 2017, [https://one.oecd.org/document/DAF/COMP/WD\(2017\)12/en/pdf](https://one.oecd.org/document/DAF/COMP/WD(2017)12/en/pdf), p. 8.

56 *Algorithms and Collusion: Competition Policy in the Digital Age* (OECD, 2017), pp. 23-24.

57 *Pricing algorithms: Economic working paper on the use of algorithms to facilitate collusion and personalised pricing* (CMA, 8 October 2018), para. 11; *Personalised Pricing for Communications* (Ofcom, 4 August 2020), p. 10.

58 Cf. *Pricing algorithms: Economic working paper on the use of algorithms to facilitate collusion and personalised pricing* (CMA, 8 October 2018), para. 5.37: 'algorithmic pricing is more likely to facilitate collusion in markets which are already susceptible to coordination. For these 'marginal' markets, the increasing use of data and algorithmic pricing may be the 'last piece of the puzzle' that could allow suppliers to move to a coordinated equilibrium. However, in our tentative view, it seems less likely than not that the increasing use of data and algorithms would be so impactful that they could enable sustained collusion in markets that are currently highly competitive, or those with very differentiated products, many competitors, and low barriers to entry and expansion.' See also para. 5.9.

59 Cf. *Pricing algorithms: Economic working paper on the use of algorithms to facilitate collusion and personalised pricing* (CMA, 8 October 2018), para. 4.7

60 See, e.g., *Pricing algorithms: Economic working paper on the use of algorithms to facilitate collusion and personalised pricing* (CMA, 8 October 2018), para. 2.8.

automated their pricing decisions.⁶¹ In fact, many companies will not even be interested in a collusive equilibrium. This applies especially for companies active in markets that are characterised by innovation, where the present value of collusion is limited.⁶² The same would apply to companies whose business plan is focused on growth rather than short-term profits.⁶³ Neither of these scenarios is uncommon in digital markets. It should also be noted that companies that do rely on automatic price adjustments are less vulnerable to rogue employees that do not follow company compliance rules.

Fifth, intervention in these very select cases will raise some practical questions. For example, as pointed out by the OECD, 'it could be a delicate task to find an adequate remedy in case of algorithm-driven conducts'.⁶⁴ While ordering a company to stop using a certain algorithm is easy enough, it would seem unadvisable to ban the use of algorithms entirely, as they are normally efficiency enhancing. And it will be a challenge to ensure that the next algorithm is not able to autonomously reach tacit coordination.⁶⁵ However, in a speech in Berlin in March 2017, Commission Vice President Margrethe Vestager said that companies should ensure antitrust compliance by design when developing the algorithm and keep track of how the algorithm works, since they will be held responsible for anticompetitive conducts resulted from their algorithms' actions.

Notwithstanding the above observations, with the consultation on a new competition tool, a new era seems to be emerging with an increased focus on structural issues that do not amount to actual collusion.

Looking forward

There is currently no basis on which enforcement agencies can address scenarios involving the use of pricing algorithms absent collusive communications. That said, companies designing or using price algorithms can expect increased attention and potentially new EU rule making that addresses circumstances where price algorithms are used on a widespread basis. As indicated above, the Commission is in the process of assessing the need for the creation of a 'new competition tool' to deal with oligopolistic market structures featuring increased transparency due to algorithm-based technological solutions.⁶⁶ Initial feedback on the consultation shows that at least some stakeholders share the Commission's concerns about price algorithms.⁶⁷

61 The findings of the Autoridade da Concorrência even show that those firms that do rely on automatic price adjustments use software that was developed internally, further reducing the likelihood of collusion. See *Digital ecosystems, Big Data and Algorithms* (Autoridade da Concorrência, July 2019), para. 196.

62 Cf. *Algorithms and Collusion: Competition Policy in the Digital Age* (OECD, 2017), p. 23.

63 Cf. *Algorithms and Collusion* (Note from the European Union, 21-23 June 2017), p. 8.

64 *Algorithms and Collusion: Competition Policy in the Digital Age* (OECD, 2017), p. 42.

65 *Algorithms and Collusion: Competition Policy in the Digital Age* (OECD, 2017), p. 49.

66 European Commission's Inception impact assessment, available at: <https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12416-New-competition-tool>.

67 See, e.g., Feedback from: Netherlands Ministry of Economic Affairs and Climate Policy: 'The Netherlands also recognises the issue addressed in the inception impact assessment that the widespread use of algorithms may cause market conditions to be more favourable to tacit collusion', <https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12416-New-competition-tool/F535509>.

Pending the decision on the potential introduction and scope of a new competition tool, we offer a few suggestions to control for enforcement risk.

First, it would seem advisable for companies to document the purpose of the algorithm in both its business and its technical context and changes in the use over time.⁶⁸ The competitors whose prices are factored in and the timeline for price optimisation may be relevant factors to document for the user of a pricing algorithm.⁶⁹ Second, certain safeguards may be included in the contractual arrangements between the user and a software provider or a platform. For example, the user could restrict the vendor from using the company's data for other than the contractual purposes and not to disclose or use it for other engagements.⁷⁰ Third, users of third-party pricing algorithms (especially in concentrated markets) could require some form of customisation to avoid the risk that competitors rely on the identical pricing software.⁷¹ Fourth, users of algorithms may want to regularly assess the price developments to identify patterns that are not consistent with the structure of the market.⁷² Having these safeguards in place should be helpful in addressing potential exposure, especially for companies active in the select markets where use of pricing algorithms could attract enforcer attention.

68 Cf. Joint Study on Algorithms and Competition by the French Autorité de la concurrence and the German Bundeskartellamt (November 2019), p. 62; Unlocking digital competition – Report of the Digital Competition Expert Panel (March 2019), 3.171; Digital ecosystems, Big Data and Algorithms (Autoridade da Concorrência, July 2019), para. 275.

69 Cf. *Pricing algorithms: Economic working paper on the use of algorithms to facilitate collusion and personalised pricing* (CMA, 8 October 2018), para. 8.7; Unlocking digital competition – Report of the Digital Competition Expert Panel (March 2019), 3.171.

70 Cf. Joint Study on Algorithms and Competition by the French Autorité de la concurrence and the German Bundeskartellamt (November 2019), p. 37.

71 Cf. *Digital ecosystems, Big Data and Algorithms* (Autoridade da Concorrência, July 2019), para. 269: 'resorting to the same algorithm or the same third-party provider of pricing algorithms will be viewed with suspicion by the AdC, when done by competing firms in the same relevant market.'

72 Cf. *Pricing algorithms: Economic working paper on the use of algorithms to facilitate collusion and personalised pricing* (CMA, 8 October 2018), para. 9.1.

Appendix 1

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Increasingly, competition enforcement in digital markets is moving on from a discussion of whether established competition tools and laws are sufficient for the new challenges of the online world, to specific and targeted enforcement against tech companies. This fully updated *E-commerce Competition Enforcement Guide*, edited by Claire Jeffs, looks at this evolution and discusses its impact on companies, consumers and indeed competition itself. Drawing on the collective wisdom and expertise of distinguished experts from around the world, the Guide provides insight on the differing approaches adopted by enforcement agencies and whether a balance is being struck between maintaining a vigilant approach to the digital economy and allowing competition to flourish.

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