

**DIRECTORATE FOR FINANCIAL AND ENTERPRISE AFFAIRS
COMPETITION COMMITTEE**

Algorithms and Collusion - Note from BIAC

21-23 June 2017

This document reproduces a written contribution from BIAC submitted for Item 10 of the 127th OECD Competition committee on 21-23 June 2017.

*More documents related to this discussion can be found at
www.oecd.org/daf/competition/algorithms-and-collusion.htm.*

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Business and Industry Advisory Committee (BIAC)

1. Introduction

1. Recent years have witnessed an increased use of pricing algorithms and artificial intelligence by firms offering services and products online and offline. It is maintained that, coupled with the availability of large data sets, this might change the competitive landscape. Indeed, the collection and analysis of data sets containing information on customers and, in some cases, competitors, may have an effect on the intensity of price competition.

2. On the one hand, detailed knowledge about their customers may enable firms to use algorithms to price differentiate based on the (perceived) reservation price of individual customers, to promote items that are complementary to items previously purchased, or that are otherwise tailored to specific users. As BIAC has stated previously, the associated effects on allocative efficiency are generally positive.¹ In addition, information on competitors' pricing may be used as an input into a pricing algorithm to optimize their own pricing in an attempt to offer more competitive prices to customers and, as a consequence, increase interbrand price competition.

3. On the other hand, data about competitors may in some specific settings facilitate tacit collusion, i.e. conscious parallelism and, as a consequence, soften price competition. This means that each firm is aware that its market behavior will affect the other sellers and their market conduct. There is however consensus among economists that for tacit collusion to occur a number of conditions must necessarily be met. In particular, the market must be sufficiently transparent for the firms which coordinate their conduct to be able to monitor sufficiently whether the rules of coordination are being observed. Second, there must be a form of deterrent mechanism in the event of deviant conduct. Third, the reactions of firms which do not participate in the coordination, such as current or future competitors, or the reactions of customers, should not be able to jeopardize the results expected from the coordination.² In addition, firms should be able to punish possible deviations, for instance by going back to the competitive equilibrium for at least a period of time. Such conditions are rarely met: explicit collusion is itself vulnerable to deviation from the collusive equilibrium, and tacit collusion is even more complex to maintain. Only specific market circumstances (related to the information structure and to the oligopolistic structure of the market) are able to give rise to tacit collusion. Due to the absence of explicit collusion, tacit collusion is not caught by Article 101 TFEU (although it may sometimes constitute an abuse of a collective dominant position under Article 102 TFEU).³

4. While BIAC appreciates that algorithms may in some specific circumstances increase the scope for tacit collusion, it submits that algorithms do not intrinsically lead to

¹ BIAC's submission on Price Discrimination (2016), DAF/COMP/ WD(2016)75.

² See Case T-342/99, *Airtours*, paragraph 62, Case T-464/04 *Impala*, paragraph 247 and Case C-41306 *Bertelsmann and Sony*, paragraph 123. See also EU Guidelines on the assessment of horizontal mergers (2004), note 29.

³ See for instance Joined Cases C-395 and 396/96, *Compagnie maritime belge*

this effect; it is only when these conditions are met that tacit collusion *may* occur. BIAC emphasizes that a greater use of pricing algorithms does not necessarily increase the likelihood of explicit or tacit collusion; in some cases the market structure and market conditions themselves may already give rise to a certain level of tacit collusion, while the use of pricing algorithms does not make collusion more or less likely; in other cases pricing algorithms may also be used to disrupt tacit collusion among other market participants.

5. BIAC is not convinced that there is any enforcement gap in relation to industry practices that may involve pricing algorithms. It therefore advocates a cautious approach and submits that antitrust enforcement is only warranted in cases where there is persuasive evidence of collusion. By the same token, it believes that there are insufficient indicia to suggest that ex-ante regulation or industry self-regulation, for instance through the voluntary publication of algorithms that companies use, is warranted. On the contrary, there is a significant risk that ex-ante regulation, or the mandatory disclosure of proprietary algorithm know-how reduces efficiency and may even lead to anti-competitive effects sanctioned by competition enforcement agencies or governments.

2. Increased potential for tacit collusion?

6. As mentioned above, the necessary conditions for tacit collusion have been well documented in economic literature. Tacit collusion requires sufficient transparency, detection of deviating conduct and the absence of countervailing measures that disrupt the collusive arrangement.⁴

7. As a corollary, it is accepted that a number of market conditions may prevent tacit coordination. For instance, the greater the product heterogeneity of products and the more different cost structures are, the more difficult coordination is; the larger the number of sellers is, the more difficult it is to collude and the larger the time lag is between deviant conduct deviating from the collusive scheme and retaliation, the more difficult it is for the coordination to persist.

8. BIAC acknowledges the theoretical possibility that the use of pricing algorithms or artificial intelligence may affect some of the market conditions that tend to prevent coordination and that, as a consequence, the use of algorithms may in theory facilitate coordination. In particular, if programmed well, pricing algorithms may facilitate coordination even among large number of sellers; monitoring algorithms may more quickly detect (genuine) price deviations and may respond more quickly to cheating.

9. However, the possibility that pricing algorithms may have the potential to weaken some of the market conditions that normally prevent coordination, does not imply that those algorithms do, in fact, in a given market setting, facilitate or enable tacit collusion. In fact, even if pricing algorithms are used, the necessary conditions for tacit collusion may not be met, for instance because tacit collusion is simply not feasible in light of different cost structures or product heterogeneity to start with. Increased customization of products and prices associated with the use of Big Data are likely to make tacit or explicit

⁴ See for instance Church and Ware, Industrial Organization (2000), page 314 et seq.

collusion more difficult.⁵ Accordingly, in those situations, the use of algorithms does not increase the potential for tacit collusion.

10. In addition, while it is sometimes assumed that pricing algorithms are used to collude with competitors, the very opposite may equally be true: even if competitors' pricing could be accurately observed, the firm using the algorithm may have an incentive to pursue a disruptive pricing strategy, thereby bringing more competition to the market. Algorithms may indeed be designed to undercut rivals, or even to price below cost in an attempt to grow sales or exclude competitors.

11. Finally, it can be expected that buyers who may believe that they are suffering as a result of tacit price collusion, will try to resort to countervailing measures, for instance by not-disclosing information essential to the colluding sellers, bundling purchases with those of other buyers, or by sponsoring the new entry of more competitive sellers into the market.

12. As a result, it is impossible to conclude that the use of algorithms by definition, or even generally, increases the likelihood of tacit collusion. Instead, what is needed in each specific case, is a thorough and detailed investigation based on the actual functioning of the algorithms involved and the specific market conduct and conditions at hand, before one may conclude that tacit collusion occurs.

13. But even if an enforcement agency would suspect or find that tacit collusion indeed occurs, it remains to be seen whether this can be explained in whole or in part by the algorithms used by the market participants. Indeed, without a detailed analysis into the actual effects of the use of the algorithms by the various market participants, it cannot be excluded that tacit collusion would have occurred even without the use of those algorithms.

3. Competition law enforcement challenges

14. BIAC acknowledges that it may be difficult for competition enforcement agencies to distinguish between situations where algorithms help generate consumer benefits in the form of personalized pricing and product customization on the one hand and situations where algorithms may be instrumental in achieving tacit or explicit collusion. In some respects, these challenges are analogous to the analytical difficulties involved in distinguishing between pro-competitive and potentially anti-competitive exchange of information between market participants.⁶

15. BIAC acknowledges that as a matter of principle the potential for (tacit) collusion through the (simultaneous) use of (similar or identical) pricing algorithms cannot be excluded. Indeed, it cannot be excluded that in exceptional circumstances algorithms may indeed be used to strengthen an existing cartel arrangement, or to facilitate tacit collusion.

16. However, BIAC believes that, while it may perhaps be difficult in practice to adduce the necessary evidence for an antitrust violation, the scope of competition law is sufficiently broad to capture most of the anti-competitive scenarios which may involve

⁵ Note that increasingly differentiated products and customer-specific pricing tend to lessen the potential for tacit collusion.

⁶ See BIAC's comments for the 2010 OECD Roundtable on Information Exchanges Between Competitors under Competition Law, DAF/COMP(2010)37.

the use of pricing algorithms. In addition, competition law enforcement agencies generally have the necessary investigative powers to uncover the information they would need to establish an antitrust violation.

17. In particular, competition law enforcement agencies are well equipped to establish violations in instances where algorithms are used to implement and monitor cartel agreements, and where the same or parallel algorithms are used by multiple firms to implement a collusive scheme. It appears that these scenarios involve explicit agreements.

18. BIAC submits that there is insufficient empirical evidence to suggest that situations of tacit collusion brought about by algorithms are prevalent, or may occur frequently in the future. In particular, it is not aware of algorithms used to signal price increases to other market participants and the industry-wide use of those algorithms.⁷ BIAC also observes that at least some scenarios may be caught by the competition rules prohibiting the abuse of a (joint) dominant position.

19. In light of the above, BIAC believes that there is currently no need to consider expanding the scope of competition law, in particular the notion of “restrictive agreement.”

4. Regulating the use of pricing algorithms?

20. BIAC supports continued efforts to critically monitor and review the market developments with a view to establishing whether the application of competition law fails to capture instances of tacit collusion brought about by the (simultaneous) use of pricing algorithms.

21. However, BIAC is not in favor of mandating the publication of proprietary algorithms developed by companies, or to otherwise regulate the use of those algorithms, for the following reasons.

22. First, an obligation to make algorithms available to others does not correspond to a clear and well-articulated need; there is insufficient evidence to suggest that the use of algorithms significantly contributes to collusive outcomes. Second, such a general obligation is also likely to be overbroad as it would potentially capture a large number of algorithms that are pro-competitive; those pricing tools may be indispensable for companies to offer innovative and tailored product offerings. Mandating the publication of those tools may jeopardize the firms that have developed them and the incentives for future investment in them. Third, and perhaps most importantly, the mandatory disclosure of pricing algorithms, which may also involve proprietary (customer) data sets, would imply a compulsory license to the intellectual property and know-how that is not justified under current doctrines of refusals to deal; compulsory access to those data would thus go significantly beyond what competition law mandates.

⁷ In this respect, it is noted that the “parallel” use of the “same” algorithms does not, in and of itself, imply similar or identical pricing decisions. This is because each of the users of the algorithms may, and is indeed likely, to have access to different data sets.