

**DIRECTORATE FOR FINANCIAL AND ENTERPRISE AFFAIRS
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Algorithms and Collusion - Summaries of Contributions

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This document reproduces summaries of contributions submitted for Item 10 of the 127th meeting of the 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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Algorithms and Collusion - Summaries of Contributions

This document contains summaries of the various written contributions received for the discussion on Algorithms and Collusion (127th Competition Committee meeting, 21-23 June 2017). When the authors did not submit their own summary, the OECD Competition Division Secretariat summarised the contribution. Summaries by the OECD Secretariat are indicated by an *.

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Business and Industry Advisory Committee (BIAC)

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. 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 inter-brand price competition.

On the other hand, data about competitors may in some specific settings soften price competition. There is however consensus among economists that for tacit collusion to occur a number of conditions must necessarily be met. BIAC's submission discusses and explains why these necessary conditions are rarely met.

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.

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.

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 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 most importantly, the mandatory disclosure of pricing algorithms, which may also involve proprietary (customer) data sets, would likely 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.

European Union*

The contribution from the European Union sets out preliminary considerations that may be relevant to the debate on Algorithms and Collusion including some of the possible competition implications of pricing algorithms in a vertical context and in a horizontal context.

In a vertical context, price monitoring algorithms may be used by suppliers to monitor fixed or minimum prices, or to monitor "recommended" prices so as to exercise pressure on, or provide incentives to, the retailer to respect those recommended prices, thereby turning them into fixed or minimum sale prices (RPM). Moreover, the use of price monitoring/matching algorithms by one retailer may have the effect that higher prices spread from sellers that engage in RPM to other sellers.

In a horizontal context, algorithms may be used (a) to monitor agreed prices, (b) to implement pre-existing explicit collusion, or (c) as a means of communication to engage in explicit collusion, including through "hub and spoke" collusion and signalling, d) to engage in tacit collusion.

To a large extent, pricing algorithms can be analysed by reference to the traditional reasoning and categories used in EU competition law.

More generally, the treatment of pricing algorithms under EU competition law rests on two important principles. First, if pricing practices are illegal when implemented offline, there is a strong chance that they will be illegal as well when implemented online. Second, firms involved in illegal pricing practices cannot avoid liability on the grounds that their prices were determined by algorithms. Like an employee or an outside consultant working under a firm's "direction or control", an algorithm remains under the firm's control, and therefore the firm is liable for its actions.

Italy*

The Italian Competition Authority (“AGCM”) acknowledges that algorithms will become increasingly widespread in business practices, bringing numerous benefits for both companies and consumers, helping them in making certain kinds of decisions in contexts of rapidly changing and complex markets. In some instances, pricing algorithms might pose challenges to competition policy as well as to other areas such as privacy and intellectual property rights.

Addressing issues raised by the use of pricing algorithms, the current legal framework regarding cartels and concerted practices appears to be adequate, as long as they serve as a more effective tool to implement the infringement or a practice facilitating it. The issue of liability, the notion of “concerted practice” and the associated evidentiary standards developed by the case law and practice over the years can be adapted to address this type of scenarios.

More complex challenges for the Authority and the Courts could arise in scenarios where algorithms are self-learning and therefore capable of recognizing mutual interdependency and readapting behaviour to the actions of other market players, without inputs from humans. In particular, the most difficult question is under which conditions antitrust liability can be established in situations where the links between the algorithms and the human beings become more blurred: in such cases determining the liability will depend mainly on the facts at hand.

The debate around algorithms and competition policy is still at an initial stage and the Authority considers it premature the question whether regulatory interventions are desirable without an in-depth understanding of this phenomenon: for instance, continuing research in the ability of algorithms to reduce barriers to coordinated interactions would be extremely valuable especially if competition authorities consider strengthen their tools for the coordinated effects analysis.

To this end, market studies may represent a flexible instrument to acquire knowledge and expertise on novel issues like algorithms. Still with a view to improving its understanding of this novel issue, the AGCM is currently expanding its skills and expertise also in the areas of IT and artificial intelligence.

In the Authority’s view, competition authorities are particularly well placed in addressing the antitrust concerns posed by pricing algorithms given the economy-wide perspective of competition law and the experience already gained in cases involving digital markets. Furthermore, in rapidly changing or innovation driven markets, antitrust enforcement may prove more effective in preserving competitive dynamics while it might difficult to design regulatory frameworks which are sufficiently flexible so as to be “future-proof” and “fit for purpose” in light of the pace of technological developments. Finally, competition agencies with competence also in consumer protection enjoy the additional advantage of employing a wider toolbox to maximize the benefits of the use of algorithms for consumers.

Russian Federation

The Federal Antimonopoly Service of Russia (“FAS Russia”) since 2016 has started to tackle the issue of the development and expansion of use of software algorithms as a part of common business practices that may significantly change conditions for competition on markets. Currently the following problematic questions require new approaches from the FAS Russia: 1) how to apply the antimonopoly legislation to collusions exercised by computers, taking into account that the legal provisions concern relations that involve economic entities, organisations, authorities and individual persons; 2) how to detect long-term cartels that might be a result of using algorithms for setting prices.

Since 2016, the FAS Russia has also started to collect the information from a number of resellers on software products that optimise price-setting. The information equally was requested from the developer of one of such products.

When analysing the received information, the FAS Russia revealed that some resellers use different software products when determining retail prices for products. These include Competera, Oracle Retail Regular Price Optimization; Revionics, METACOMMERCE.

Some of products for price-optimisation might present a threat they can allow coordination of economic activities and thus restriction of competition.

After collecting the information on several software products for price-optimisation, as well as receiving complaints on concerted actions of certain enterprises in sales of equipment, in 2017, the FAS Russia initiated dawn raids of those companies. As of now, the relevant investigation continues.

Another challenge in the investigations involving use of computer algorithms is linked to the difficulty of determining the responsibility of computer engineers for programming machines that are “educated” to coordinate prices on their own.

Singapore*

The Competition Commission of Singapore (“CCS”) emphasized in its contribution a study on e-commerce “*E-commerce and its impact on competition policy and law in Singapore*” (“Study”) prepared by a consultant company, and an occasional paper of CCS on “*E-commerce in Singapore – How it affects the nature of competition and what it means for competition policy*” (“Occasional Paper”).

The Study highlighted that data as a key asset and identified that access to larger amounts of data may allow robo-sellers to gain a better understanding of market conditions and more effectively set prices that maximise profits taking account of specific conditions at the time. This could result in keener competition as firms have a greater ability to gather and process more detailed information about demand and the behaviour of their competitors. However this in combination with the use of algorithmic pricing and robo-sellers, may present a greater risk of tacit collusion, and may result in a greater prevalence of price discrimination. The Study noted that the effects of price discrimination can possibly pose some practical difficulties, while the extent to which (tacit) collusion supported by the use of common pricing algorithms can be addressed is less clear. There may also be difficulties in detecting such behaviour and that firms using pricing algorithms may not knowingly enter into such practical co-operation.

The occasional paper observed that the use of algorithmic pricing systems and online price transparency may make it easier for companies to collude and fix prices. For example, companies may use sophisticated systems to monitor their competitor’s online prices to ensure that they do not undercut their rivals. The occasional paper noted that the issues identified in the Study were not specific to the e-commerce setting, but that some of the identified features and issues are likely to be more prevalent in online markets. Consequently, CCS highlighted that such markets may require particular attention when CCS conducts its assessment. CCS also noted that it was alive to the fact that online price information could facilitate collusion.

Recognising this, the CCS is also undertaking further work on the landscape of data and data analytics in Singapore, which will look at the current industry landscape and companies’ data usage and sharing practices in Singapore, including: how selected industries are being transformed or will be transformed by harnessing data, outlook, trends and key challenges to growth of the data and analytics industry, and how these may affect businesses; and the adoption of data, and prevalence of data sharing of companies in Singapore and their underlying motivations or inhibitions.

Ukraine*

The contribution from the Ukrainian Competition Authority (“AMCU”) discusses a case on the violation of the legislation on protection of economic competition in the form of anticompetitive concerted actions in the retail market of Kyiv. This violation was committed by Ukrainian distribution networks and companies affiliated with transnational corporations, and also a market research company.

The AMCU found out that in fact the only information that is considered by distribution networks when setting prices is the information on internal activity indicators of particular competing networks, which is provided only by the market research agency, the distribution networks cannot obtain such information from open sources.

According to the AMCU, the concerted actions were taking place in the market for the long period of time. These actions enable distribution networks to obtain additional incomes through the unjustified increase of prices and the dictatorship of unfavourable and unequal terms of cooperation to the suppliers of goods.

The activity of distribution networks is supported with constant and comprehensive exchange of information with the help of the market research agency (through the means of Internet, special server or portals, e-mail, informal conversations, trainings, seminars, meetings). The analysis also showed that the level of detail of the information exchanged and the frequency rate of such exchange exceeds in times the level, which is necessary and sufficient for the market situation assessment. At the same time such level is sufficient for ensuring relevant coordinated behaviour of cartel participants.

In its decision the AMCU came to the conclusion that the activity of the market research company and the distribution networks had created a mechanism, which substantially reduced the level of their informational uncertainty in relations between distribution networks and improved asymmetry of information, which is considered by market participants in taking decisions, encouraged possibility of distribution networks to act under conditions of market power. The mentioned system of information endowment enabled distribution networks to conduct similar actions with regard to the determination of terms of contracts with suppliers, the performance of assortment and pricing policies, which were not defined by objective reasons, and also to control over the adherence of similar trends by all participants.

United Kingdom

The UK submission explores the potential effects on competition and consumers that may arise from the use of algorithms in the digital economy and summarises recent relevant CMA enforcement and research.

The ability of algorithms to sort and process huge volumes of data has been key to the development of the online commerce sector, and can generate significant benefits for consumers. However, those algorithms could also have the potential to facilitate business practices that harm competition or consumers.

The nature of algorithms and algorithm-driven markets, and the as-yet limited experience of applying competition laws and tools in relation to them, present challenges for competition authorities in effectively detecting, assessing and – where concerns are found – addressing such potential harm.

By seeking to deepen its understanding of how algorithms affect competition and consumers, and by targeted use of its full range of competition and consumer powers, the CMA aims to meet those challenges and to ensure that online markets work well for consumers.

United States*

The contribution from the Antitrust Division of the U.S. Department of Justice (“DOJ”) and the U.S. Federal Trade Commission (“FTC”) addresses the application and limits of U.S. antitrust analysis to business conduct involving technologically advanced tools such as pricing algorithms.

Firms have long employed implicit or explicit sets of rules to set prices, and these rules or formulas have been implemented by individuals. The new practice that has drawn the attention of academics and policy makers is when price-setting is done not by individuals, but by computers. Algorithmic pricing can be highly competitive by facilitating rapid competitive response. Indeed, a core principle of free market competition is that firms adjust pricing in response to competitive conditions, including the prices charged by competitors. Antitrust law views such behaviour as generally procompetitive. That prices move up or down more quickly in response to competition or consumer demand through the use of computerization does not change this basic principle.

On the other hand, the speed and ease of algorithmic pricing may affect an individual firm’s behaviour where such systems are widely used. For instance, rapid automated pricing programs likely reduce the benefit that a firm would otherwise enjoy from either discounting (in a free market) or defecting from collusive pricing (in a cartelized market). Especially in online commerce, such price deviations can be quickly detected and responded to.

Computer-determined pricing may be susceptible to coordination, just as human-determined pricing can be. Algorithmic pricing may similarly be a mechanism for implementing a collusive agreement between individuals or firms. For example, competing firms could agree to use pricing algorithms that enhance their joint profits by setting higher prices than either firm would have charged using only its own rules or algorithm. In this case, the anticompetitive agreement is between the firms, and the algorithms are simply the means of effectuating the agreement and the mechanisms through which the collusive prices are set.

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. For example, if multiple competing firms unknowingly purchase the same software to set prices, and that software uses identical algorithms, this may effectively align the pricing strategies of all the market participants, even though they have reached no agreement. Even when firms do not all adopt identical algorithms, the use of algorithms may increase price transparency and help to stabilize prices. However, enforcement agencies normally police the risk for interdependence through merger control (due, in part, to the difficulties in crafting an adequate remedy to interdependence) while prosecuting collusion directly. This distinction remains appropriate when evaluating the use of algorithms.

Broadly speaking, the collection and use of data are evolving rapidly and in tandem with the use of algorithms. Large data sets that companies analyse to reveal patterns or trends, especially involving human behaviour, are inputs to algorithms in many circumstances. Algorithms cannot exist without large, and increasing, amounts of data. Although it is well outside the scope of this roundtable and paper to discuss the topic, the Agencies have examined issues surrounding large data sets. The FTC in particular has tools to study and maintain current knowledge on new trends in technology that impact its competition and consumer protection enforcement work.