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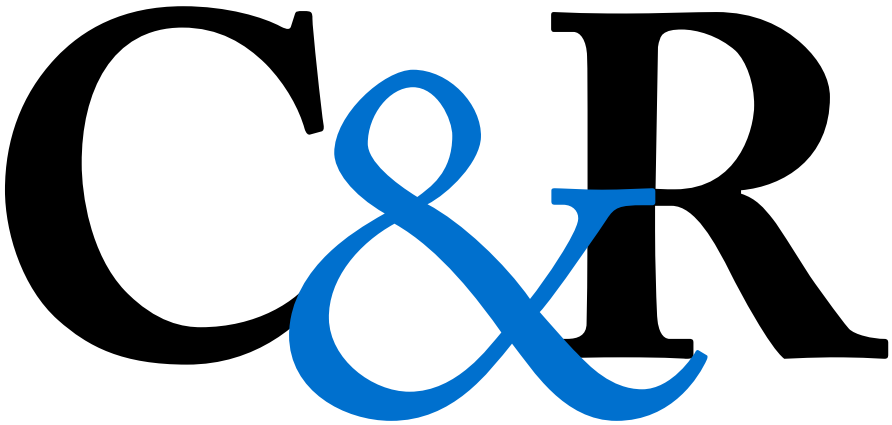

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ÍNDICE

EDITORIAL/*EDITORIAL NOTE*

Maria João Melícias
Miguel Sousa Ferro

No seu número 39, a Revista de Concorrência & Regulação tem a honra de publicar artigos associados a apresentações feitas na 1.ª conferência anual da plataforma W@CompetitionIberia, que se realizou em Lisboa no dia 8 de maio de 2019. Publicamos também algumas reflexões apresentadas no âmbito das celebrações do 10.º aniversário do Círculo dos Advogados Portugueses de Direito da Concorrência, que não foram integradas no número anterior. E, como sempre, temos contributos doutrinais autónomos destes eventos.

Thomas Hoehn usa a sua vasta experiência enquanto "monitoring trustee" de condições impostas para a autorização de concentrações para refletir sobre o modo como este instrumento jurídico tem sido

In its Issue 39, the Revista de Concorrência & Regulação has the honour of publishing papers associated to presentations carried out at the annual conference W@CompetitionIberia, which took place in Lisbon on 8 May 2019. This issue also includes some of the thoughts which were put forward in the scope of the celebrations of the 10th anniversary of the Portuguese Competition Lawyers Circle, which were not included in the previous Issue. And, as always, we have doctrinal contributions not associated to these events.

Thomas Hoehn uses his vast experience as a "monitoring trustee" of conditions imposed in exchange for the authorization of concentrations to discuss the way in which this legal

utilizado, com complexidade crescente. Olhando para exemplos do passado, o autor defende que, em vez de se optar por uma abordagem de que certos casos são "demasiado grandes para remediar", as autoridades devem concentrar-se na revisão ex post dos compromissos, num certo hiato de tempo. O autor destaca ainda a necessidade de mais tempo e recursos para os "trustees" realizarem as análises económicas complexas necessárias.

Marta Borges Campos compara o nível de proteção conferido pelo ordenamento jurídico português aos direitos da defesa com o grau de proteção exigido pelo artigo 3.º da Diretiva ECN+. A autora identifica várias questões em que é necessário alcançar convergência, sugerindo que Portugal terá de incluir normas a este respeito na transposição da Diretiva ou que, pelo menos, os tribunais nacionais terão de ter em conta as exigências do direito da União quando recorram às regras processuais nacionais na aplicação dos artigos 101.º e 102.º do TFUE (exceto quando o grau de proteção conferido pelo direito nacional seja superior). A juíza do tribunal da concorrência expressa também o interesse em se consolidar a solução jurídica de questões que são rotineiramente suscitadas no contencioso da concorrência, com os mesmos argumentos, impedindo a repetição

instrument has been used, with growing complexity. Taking a look at past examples, the author argues that, rather than opting for the view that some cases are "too big to fix", authorities should focus on ex-post review of commitments within a certain time period. The author also stresses the need for greater time and resources for the trustees to carry out the required complex economic assessments.

Marta Borges Campos compares the level of protection granted by the Portuguese legal order to the rights of the defence with the degree of protection required by article 3 of the ECN+ Directive. The author identifies several issues in which convergence is required, suggesting that new rules will be required in the transposition of this Directive or, at least, that national courts will need to take the requirements of EU Law into account when applying national procedural law to enforce Arts. 101 and 102 TFEU (except when the degree of protection deriving from national law is actually higher than that imposed by EU Law). The judge of the competition court also expresses the importance of consolidating the legal solution for issues which are routinely invoked in competition litigation, with the same arguments, preventing the superfluous repetition of the same discussions in every case, notwithstanding the

supérflua das mesmas discussões em todos os casos, sem prejuízo da análise de questões e argumentos novos.

João Gata discute, numa ótica da ciência económica, a posição que deve ser adotada na política de concorrência no que respeita à utilização de algoritmos em termos que têm por objeto ou efeito a concertação entre empresas e redução da concorrência, ainda que atuando de modo autónomo. A crescente sofisticação dos algoritmos tem levado alguns autores a sugerir que é necessário rever os limites do direito da concorrência. Este artigo realça as dificuldades que as autoridades públicas encontram no controlo de algoritmos, quer adotem abordagens de regulação ex ante ou ex post.

Simone Maciel Cuiabano, perita em análise económica da concorrência, analisa a utilidade de indicadores de pressão de preços como complemento a uma abordagem tradicional de análise de concentrações, baseada em definição de mercados, realçando ao mesmo tempo as limitações deste instrumento económico, levando à conclusão da necessidade da consideração conjunta de uma multiplicidade de fatores e parâmetros.

Nuno Rocha de Carvalho toma partido no debate europeu sobre a necessidade de se reformar o direito da concorrência para permitir a proteção dos ditos campões europeus. O autor defende que é importante

analysis of novel issues and arguments.

João Gata discusses, from an Economic science perspective, the position which should be taken in competition policy in what concerns the use of algorithms in terms which have as an object or effect collusion between undertakings and the reduction of competition, even if acting in an autonomous manner. The growing sophistication of algorithms has led some authors to suggest that it is necessary to revise the limits of competition law. This paper stresses the difficulties which public authorities are faced with when controlling algorithms, be it an ex ante or an ex post regulatory approach.

Simone Maciel Cuiabano, an expert on competition economic analysis, analyses the usefulness of pricing pressure indicators as a complement to a traditional approach to the assessment of concentrations, based on market definition, highlighting at the same time the limitations of this economic instrument, leading to the conclusion that it is necessary to jointly consider a multitude of factors and parameters.

Nuno Rocha de Carvalho steps into the European-wide debate over the need to reform EU Competition law to allow for the protection of the so-called European champions. The author argues that it is important to promote a healthy European industrial policy, but

promover uma política industrial europeia saudável, mas que tal não deve passar por proteger as empresas do jogo da concorrência.

Lara Tobías Peña, José Luís Rodríguez López and Pedro Hinojo González mergulham na análise e conclusões a que se chegou nas análises de mercado da autoridade nacional da concorrência espanhola, para discutir as implicações do "fintech" para o direito da concorrência e da regulação. Propõem, nomeadamente, uma abordagem funcional e harmoniosa na regulação destas atividades económicas, independentemente da tecnologia ou modo como são desempenhadas, realçando a oportunidade para repensar soluções gerais anteriormente vigentes.

Margarida Rosado da Fonseca e Tânia Luísa Faria oferecem-nos, autonomamente, as suas reflexões sobre algumas características e opções da Lei da Concorrência cuja possibilidade de revisão tem sido discutida, defendendo nalguns casos as soluções atuais e noutros a sua revisão. No contexto da transposição da Diretiva ECN+, estes dois artigos são contributos que enriquecem o debate em curso.

that this should not include protecting undertakings from competition.

Lara Tobías Peña, José Luís Rodríguez López and Pedro Hinojo González dig into the analysis and conclusions arrived at in market analysis by the Spanish National Competition Authority to discuss the implications of "fintech" for competition and regulatory law. The authors propose, inter alia, a functional and harmonious approach to the regulation of these economics activities, independently of the technology used or manner in which they are carried out, highlighting the opportunity to rethink general solutions previously in force.

Margarida Rosado da Fonseca and Tânia Luísa Faria provide us, autonomously, with their thoughts on some of the characteristics and options of the Portuguese Competition Act, the revision of which has been debated, defending in some cases the current solutions and in others their amendment. In the context of the transposition of the ECN+ Directive, these two papers contribute to the enrichment of the ongoing debate.

DOUTRINA

Doutrina geral

CHALLENGES IN DESIGNING AND IMPLEMENTING MERGER REMEDIES – A MONITORING TRUSTEE PERSPECTIVE

*Thomas Hoehn**

Abstract *As Monitoring Trustee, I have observed an increase in complexity at several levels requiring more time and resources to ensure effective implementation of merger remedies. I advocate that purchaser reviews in EC merger control are enhanced and extended, particularly in complex up-front merger divestiture remedies that require careful economic analysis of competition and innovation incentives and independence of potential purchasers. This raises the question whether overly complex cases should be rejected as too big-to-fix. To avoid this dramatic step leading to more prohibition decisions, I support the published ex-post reviews and the potential modification of remedies to obtain more assets post-closing.*

1. INTRODUCTION

In this short paper, I summarise my reflections and thoughts on the challenges of designing and implementing merger remedies from the perspective of the Monitoring Trustee that I presented in an open seminar at the Portuguese Competition Authority in July this year[1].

In my view there are three major challenges which have become increasingly important and and re-enforce each other: (i) the complexity of the underlying competition issue and subsequent complexity of remedial actions, (ii) the analysis of incentives of potential purchasers in a divestiture remedy to compete as well as to continue to innovate, (iii) the analysis of common

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1 I have previously discussed this topic on a panel at the 2019 GCLC Annual Conference in Brussels on 1 February 2019.

ownership structures of divestors and potential purchasers and (iv) the urgency to complete a transaction through increased use of up-front buyer provisions.

2. CHALLENGES

Let me start with the first challenge, complexity.

2.1. Complexity

The most important challenge to the effective implementation of remedies is the increased complexity of the subject matter under investigation. Take the major antitrust cases such as Google Shopping and Google Advertising and global mergers such as Dow/DuPont (2017) and Bayer/Monsanto (2018), to name just a few recent cases. These cases illustrate well the different dimensions of the complexity: technical, legal, institutional, financial, and economic complexity. Technical complexity is inherent in antitrust remedies in the ICT industries such as Google and the earlier Microsoft Decisions of the European Commission (2004) and the DOJ (1999) and requires dedicated highly specialised technical resources in a Monitoring Trustee team. The same is true in complex mergers in the pharmaceuticals sector (e.g. Novartis/ GSK Oncology, 2015).

The economic and financial complexities directly affect the three major remedy implementation risks identified by the UK Competition and Markets Authority in its guidance on merger remedies[2]:

- Composition risks – these are risks that the scope of the divestiture package may be too constrained or not appropriately configured to attract a suitable purchaser or may not allow a purchaser to operate as an effective competitor in the market.
- Purchaser risks – these are risks that a suitable purchaser is not available or that the merging parties will dispose to a weak or otherwise inappropriate purchaser.
- Asset risks – these are risks that the competitive capability of a divestiture package will deteriorate before completion of divestiture, for example through loss customers or key members of staff.

2 Classification adopted by UK Competition Commission, CMA – Competition & Market Authority, 2018: p. 38

The legal and institutional dimensions of complexity tend to present more procedural and jurisdictional challenges. They affect the ability to design comprehensive and effective remedies in a timely manner and thereby indirectly affect the implementation risks of complex remedies. Legal and economic complexity can further occur in complex carve-outs of business assets in divestiture remedies sometimes further complicated with reverse carve-outs such (e.g. Merck/Sigma-Aldrich, 2015)[3] and complex transitional and long-term supply and technology agreements (e.g. automotive component manufacturing mergers and recent major agrochemical mergers). In these cases, the assessment of viability post-divestment can become challenging and requires the increased monitoring of transitional supply agreements, manufacturing and other purchase and supply agreements post-Closing relying on the extended monitoring of the trustee MT, following the findings of the FTC Merger Remedies Study published in 2017.[4]

To take just one case to illustrate the degree of complexity across all the five dimensions highlighted above: Dow/DuPont (2017).[5] With a combined value of the two global agrochemicals businesses of $170 billion this was the largest transaction subject to global merger review in the last few years. The transaction was reviewed and conditionally cleared subject to remedies in the major antitrust jurisdictions of the US, EU, China, and some 20 other authorities in countries with large agricultural interests such as Canada, Brazil, India etc. The coordination of the merger control investigations and the global implementation was not straightforward and required significant coordination efforts and resources at various levels [parties, external advisors (economic, legal), authorities, trustee].[6]

The remedies in the EU which cleared the merger on 27 June 2017 included the divestment of DuPont's global herbicide, insecticides businesses and the divestment of the complete DuPont R&D business organization including non-tangible and tangible assets.

3 Decision (EC) M.7435 – *Merck/Sigma-Aldrich*.

4 Federal Trade Commission, 2017.

5 Decision (EC) M.7932 – *Dow/DuPont*.

6 The author was a senior advisor to the trustee monitoring the implementation of the Commitments globally.

1. Globally, DuPont's herbicides for cereals, oilseed rape, sunflower, rice and pasture and insecticides for chewing insect and sucking insect control for fruits and vegetables, etc.
2. An exclusive license to DuPont's product for rice cultivation in the European Economic Area to address the more limited concerns relating to fungicides.
3. DuPont's global R&D organisation, with the exception of a few limited assets that support the part of DuPont's pesticide business, which was not being divested.

For a longer list of cases that have presented major challenges through their complexity I refer to the list of 10 innovation mergers that were reviewed by DG Comp 2015-2017 and discussed by Carles Esteva Mosso at the 2018 ABA conference[7]. In addition, I have prepared another list to include major mergers in the ICT industries 2015-2018.[8] These cases are shown in Table 1 below.

All these cases involved a complex assessment of innovation and competition effects of a merger that carried through to the design and implementation of appropriate remedies. In the list of ICT mergers we find cases such as Qualcomm/NXP (2018)[9], Microsoft/LinkedIn (2016)[10], Brocade/Broadcom (2017)[11] and Discovery/Scripps (2018)[12] which are notable as they led to the acceptance of behavioural remedies (including interoperability commitments) whereas the innovations cases cited by Esteva Mosso typically led to structural remedies in the form of divestiture of existing products or pipeline products, supported in some cases by behavioural elements i.e. licensing, long term supply, etc.

7 Esteva Mosso, 2018.

8 Hoehn, 2018.

9 Decision (EC) M.8306 – *Qualcomm/NXP*.

10 Decision (EC) M.8124 – *LinkedIn/Microsoft*.

11 Decision (EC) M.8314 – *Brocade/Broadcom*.

12 Decision (EC) M.8665 – *Discovery/Scripps*.

Table 1 – Innovation Mergers in 2015-2018

Pharmaceutical and medical devices	*Agrochemicals*
1. BD/Bard,	10. Dow/DuPont
2. J&J/ Actelion,	11. Bayer/Monsanto (2018)
3. Boehringer Ingelheim/Sanofi Animal Health Business	*ITC industries*
4. Novartis/GSK Oncology Business,	12. Discovery/Scripps (2018)
5. Pfizer/Hospira,	13. Qualcomm/NXP (2018)
6. Medtronic/Covidien	14.Microsoft/LinkedIn (2016)
	15. Brocade/Broadcom (2017)
Industrial or vehicle components	16. Equens/Worldline (2016)
7. General Electric/Alstom	
8. Halliburton/Baker Hughes	*High Tech engineering*
9. Knorr-Bremse/Haldex	17. RR/ITC (2017)

Sources: Esteva Mosso 2018, Hoehn 2018

The complexity challenge for remedies can be further illustrated by an older French merger involving a large package of remedies including a significant number of behavioural remedies (59 in total): Canal Plus /TPS (2006). Not surprisingly, in this case, the complex implementation proved to be too difficult and led to the imposition of significant fines in 2011 for non-compliance with the commitments and required the renotification of the transaction leading to a new set of commitments.[13] Another major media merger in 2011, this time in the US between Comcast and NBC, resulted in a similar larger number of behavioural remedies (79 individual remedy components). This latter case illustrates that the US authorities are not completely averse to adopt behavioural remedies despite a clear preference for structural solutions.

The implications for the implementation of complex remedies is that more monitoring efforts are required. This applies to structural as well as behavioural remedies. Monitoring trustee teams require more technical expertise and economic skills as will become clear when we analyse below the challenges brought about by innovation mergers with remedies that seek to ensure that the incentives to innovate are maintained.

2.2 Innovation incentives

It is useful to remind ourselves of the fundamental objective of EU merger control which is to ensure that "*Effective competition brings benefits to consumers, such as low prices, high quality products, a wide selection of goods and*

13 See press release Authorité de la concurrence, 21 September 2011 (Case n.º 11-D-12) http://www.autoritedelaconcurrence.fr/user/standard.php?id_rub=389&id_article=1697

services, and innovation".[14] The European Commission´s guidelines stress that "*in markets where innovation is an important competitive force, a merger may increase the firms' ability and incentive to bring new innovations to the market and, thereby, the competitive pressure on rivals to innovate in that market. Alternatively, effective competition may be significantly impeded by a merger between two important innovators, for instance between two companies with "pipeline" products related to a specific product market.*"[15] In the US the authorities similarly recognise the possibility that a merger may diminish innovation competition by "*encouraging the merged firm to curtail its innovative efforts below the level that would prevail in the absence of the merger. That curtailment of innovation could take the form of reduced incentive to continue with an existing product-development effort or reduced incentive to initiate development of new products*".[16]

What this means in practice is that a balancing of pro-and anticompetitive innovation and R&D effects is needed**.** Anti-competitive unilateral effects arise when a merger brings together two out of a limited number of effective innovators which, but for the merger, would have been likely to divert significant profitable future sales from each other by investing and by competing in improved, innovative, products. A merger, therefore, can reduce innovation incentives, and more generally reduce the intensity of competition in innovative products, by internalising these competitive effects. Conversely, pro-competitive effects arise when a merger would stimulate innovation through the ability of firms to better appropriate the social value of their innovation. For example, in the absence of a merger competitors may be able to free-ride on successful innovation carried out by their rivals. A merger could boost innovation by internalising these involuntary knowledge spill-overs. Similarly, a merger may enhance innovation by bringing together complementary R&D assets, by allowing for greater scale economies in process innovation, or by enabling cost efficiencies in R&D. In the Dow/DuPont case the European Commission and the DoJ had to do exactly this balancing of pro- and anti-competitive effects.[17]

The European Commission was concerned that the merger, as notified, would reduce competition on price and choice in a number of markets for

14 Source: European Commission, 2004: Paragraph 8.

15 European Commission, 2004: Paragraph 38.

16 Source: U.S. Department of Justice & Federal Trade Commission, 2010: section 6.4.

17 For a discussion see Esteva Mosso, 2018 cited above 7.

crop protection products, and also stifle innovation to improve existing crop protection products and develop new active ingredients for crop protection. In order to address the European Commission's concerns, the parties agreed to divest the relevant DuPont pesticide businesses and almost the entirety of DuPont's global crop protection R&D organisation, an unusual measure by historical standards. DuPont also agreed to divest all tangible and intangible assets underpinning the divested businesses. The European Commission concluded that the divestment package will enable a buyer to replace the competitive constraint exerted by DuPont.[18]

Similarly, after an in-depth review the Department of Justice found that as originally proposed, "*the merger would have eliminated important competition between Dow and DuPont in the development and sale of insecticides and herbicides that are vital to American farmers who plant winter wheat and various specialty crops. In addition, it would have given the merged company a monopoly over ethylene derivatives known as acid copolymers and ionomers that are used to manufacture many products, including food packaging*"[19]. The remedies obtained by the DOJ's settlement included the divestiture of DuPont's market-leading Finesse and Rynaxypyr crop protection products and the divestment of its U.S. acid copolymers and ionomers business to a buyer approved by the United States. Like the European Commission, the DOJ examined the effect of the merger on development of new crop protection chemicals but did not come to the same or similar conclusion regarding the need for a divestiture of DuPont's R&D organisation and assets.

As I found in my recent overview of merger remedies[20], the reception to this decision has been mixed. Ersbøll et al (2018) in their review of EU merger control on 2017 discuss the Dow/DuPont merger and claim that "*[t]here were no traces of this theoretical framework in past EC merger decisions. Instead the EC drew inspiration form its own guidance on technology transfer agreements and the DoJ/FTC proposal for IP licensing guidelines in the US.*"[21] Economists have also weighed in on the debate. For example, Fauver et al (2018) refer to the direct effect of the proposed merger on innovation

18 See European Commission cited 6 above.

19 Acting Assistant Attorney General Andrew Finch of the Justice Department's Antitrust Division, as quoted in Press Release Depratment of Justice, 15 June 2017. See https://www.justice.gov/opa/pr/justice-department-requires-divestiture-certain-herbicides-insecticides-and-plastics

20 See 9 supra.

21 Ersbøll; Gavala; Iverson & Naydenova, 2018.

incentives, an approach reminiscent of the "innovation markets" framework developed in the 1990s.[22] Even members of the Commission's Chief Economist team weighed into the debate and published a paper on the possible effects of mergers on innovation and consumer welfare in a model where firms compete among others through the quality of their products by innovating.[23] Their formal model suggests that a merger between two out of a limited number of innovators can depress innovation incentives and more broadly reduce current and future consumer welfare, in the absence of innovation-related efficiencies, including the internalisation of knowledge spillovers. This publication has led up to a lively debate in economic circles on the impact of mergers on innovation.

I agree that the analysis of innovation effects in merger control is challenging, not least because of the difficulties in obtaining and assessing solid empirical evidence. In my view it is not primarily the absence of a theoretical framework that is the main challenge, rather it is a question of not having sufficient data and foresights that is able to distinguish between pro- and anti-competitive effects and coming to robust conclusions. The challenge is increased through the difficulties of judging the success of pipeline products in early stage clinical trials and establishimng whether and to what extent they will compete with other pipeline products in future. These challenges carry over into the implementation of remedies where the approval of a suitable purchaser in a divestiture remedy is required who may or may not be engaged in developing similar products. Such merger reviews are in my experience as Monitoring Trustee becoming ever more demanding and complex necessitating for innovation mergers an assessment not only of a purchaser´s ability and incentive to compete but also to continue to innovate and invest in R&D at a similar level to the divesting parties. This is no mean task. Let me elaborate and explain what I mean by this.

The criteria for accepting a purchaser of a divestment business are laid out in the Commitments and have to be reviewed and assessed by the Monitoring Trustee who then provides the European Commission with a purchaser approval report based on which the European Commission can issue its approval decision.[24] What do we typically look at?

22 Fauver; Ramanarayanan & Tosini, 2018.

23 Federico; Langus & Valletti, 2018.

24 European Commission, 2008: Paragraph 119.

- Independence
- Finances
- Expertise, strategic rationale and incentives
- Competition issues
- Analysis of the transaction agreements

This requires expertise in finance and accounting, business strategy and economics.

Typically, the Trustee mandate provides for such a report to be prepared within one week of the submission of a proposal of a suitable purchaser by the parties. Such an analysis is impossible to complete within one week unless there has been plenty of time prior to the formal submission of a suitable purchaser proposal. In practice, the European Commission does not insist on the Trustee adhering to this strict deadline as the quality of the purchaser review is more important to the European Commission who has to be able to issue a purchaser approval decision that is robust and can withstand scrutiny should the purchaser approval decision be challenged in court, something that has happened in a number of instances.[25]

2.3 Independence

The suitability assessment of a potential purchaser requires among other an assessment of whether a purchaser is independent from and unconnected to the merging parties.

One issue that I want to raise in this context concerns the potential for common ownership of the merging parties and the proposed purchaser becoming an issue for purchaser approval. Common ownership of shares in competing firms by institutional investors has been identified by antitrust scholars in the US as a potential problem for effective competition in certain highly concentrated industries such as airlines.[26] The European Commission has picked up on this and took it into account in recent merger decisions such as Dow/DuPont (2017) and Bayer/Monsanto (2018). In Dow/DuPont the Commission found that 17 shareholders collectively owned ca. 21% in BASF, Bayer and Syngenta and 29-36% of Dow, DuPont and Monsanto. [27]

25 See for example the Judgment of the European Court of Justice, C-514/14 P, *Éditions Odile Jacob SAS v Commission*, ECLI:EU:C:2016:55 and Decision (EC), D/203365 – *Wendel Investissement*.

26 See: Azar; Schmalz & Tecu, 2018 or Elhauge, 2017.

27 See 6 supra, Paragraph 80, Annex 5.

The Commission considered that, "*in general, market shares used by the Commission for the purpose of the assessment of the Transaction tend to underestimate the concentration of the market structure and, thus, the market power of the Parties, and that common shareholding in the agrochemical industry is to be taken as an element of context in the appreciation of any significant impediment to effective competition that is raised in the Decision*."[28]

What does this mean for the analysis of the analysis of a proposed purchaser in a divestiture remedy? Should the assessment of a purchaser´s independence of the parties and their incentives to compete be taken into account and if how?

In the table below I show the institutional shareholding of the seller and the buyer in Linde/Praxair (2018) where the parties agreed to sell the majority of Praxair´s European business to Taiyo Nippon Sanso Corporation. The major shareholders in Praxair/Linde are[29]:

PRAXAIR (PX) / Linde PLC	
Major Shareholders	Equities %
Capital Research & Management Co. (World Investors)	6.11%
The Vanguard Group, Inc.	4.05%
Norges Bank Investment Management	3.27%
SSgA Funds Management, Inc.	2.37%
Massachusetts Financial Services Co.	2.37%
BlackRock Fund Advisors	2.21%
Wellington Management Co. LLP	1.47%
Parnassus Investments	1.02%
Franklin Advisers, Inc.	0.97%
Walter Scott & Partners Ltd.	0.80%

There was only one common major shareholders in Taiyo Nippon Sanso Corp, The Vanguard Group, with 0.89% in the Japanese company and 4.05% in the German/US entity. However, The major shareholder in the Japanese entity is Mitsubishi Chemical Holdings Corp. When this entity is taken into account the common shareholding increases as The Vanguard Group holds another 2.19% in Mitsubishi Chemical Holdings and BlackRock Fund

28 Paragraph 81 supra.

29 Source: https://www.marketscreener.com (accessed 31 January 2019).

Advisors have 3.58% in the same entity as well as Norges Bank Investment Management.[30] Thus, taking into account the common shareholding structure of all three entities reveals we can see linkages albeit at lower levels than those found in Dow/DuPont. Nevertheless, it is instructive to consider the concentration of ownership in a divestiture as well as the underlying transaction. This adds to the complexity of the implementation of divestiture commitments but may in some circumstance be important.

TAIYO NIPPON SANSO CORPORATION (4091)	
Major Shareholders	Equities %
Mitsubishi Chemical Holdings Corp.	50.60%
Taiyo Nippon Sanso Business Association	4.33%
JFE Holdings, Inc.	2.92%
Meiji Yasuda Life Insurance Co.	2.31%
Mizuho Financial Group, Inc.	1.89%
Japan Agricultural Cooperatives Group	1.62%
Asset Management One Co., Ltd.	1.49%
Nomura Asset Management Co., Ltd.	0.89%
The Vanguard Group, Inc.	0.85%
Capital Research & Management Co. (Global Investors)	0.84%

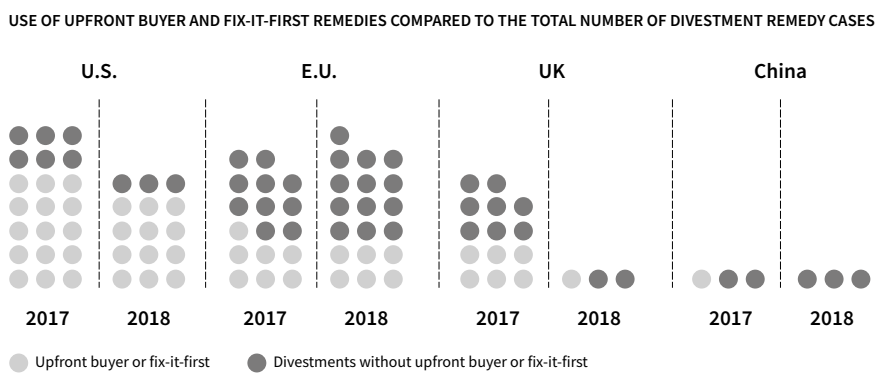
MITSUBISHI CHEMICAL HOLDINGS CORP. (4188)	
Major Shareholders	Equities %
Mitsubishi Chemical Holdings Corp.	5.52%
Meiji Yasuda Life Insurance Co.	4.27%
Asset Management One Co., Ltd.	4.20%
Sumitomo Mitsui Trust Asset Management Co., Ltd.	4.05%
BlackRock Fund Advisors	3.58%
Nippon Life Insurance Co.	2.82%
Nomura Asset Management Co., Ltd.	2.66%
The Vanguard Group, Inc.	2.19%
BlackRock Japan Co., Ltd.	1.80%
Norges Bank Investment Management	1.60%

30 Source: https://www.marketscreener.com (accessed 31 January 2019).

2.4 Urgency

The fourth challenge which exacerbates and reinforces the challenges discussed above has to do with the increased urgency through the increased use of up-front buyer provisions in divestiture commitments. In 2017 and 2018, approximately one in three of all EC remedy decisions imposed an upfront or fix-it-first purchaser clause. They have been common in the US but not are more regularly used in the EU and other jurisdictions as well as the chart below illustrates.

Figure 1: Use of Upfront Buyer and Fix-It-First Remedies



Source Allen Overy (2019). Global Trends in Merger Control Enforcement

While there are good reasons for including such provisions, they do put pressure on all parties to complete a divestiture asap. As the EU Merger Remedies Notice puts it: "*There are cases where only the proposal of an upfront buyer will allow the Commission to conclude with the requisite degree of certainty that the business will be effectively divested to a suitable purchaser. The parties therefore have to undertake in the commitments that they are not going to complete the notified operation before having entered into a binding agreement with a purchaser for the divested business, approved by the Commission.*"[31]

There are two reasons for insisting on an upfront buyer provision: a) the difficulty finding a suitable purchaser and b) concerns over rapid deterioration of the divestment business. From a Trustee perspective these concerns

31 See European Commission, 2008: Paragraph 53.

need to be balanced by the challenges of reviewing a complex transaction in a very short time period and the risks that full consistency of a divestment with the Commitments cannot be achieved, or the pool of suitable purchaser has not been properly identified and potential purchasers have been deterred (purchaser risk). The Trustee is under huge pressure to review and assess a buyer right at the beginning of its mandate and not towards the end of the first divestiture period. In contrast, in a standard divestiture with a first divestiture period of 6 months[32] this give the monitoring trustee valuable time to get to know the business to be divested and familiarise itself with the markets the divestment business competes in as well as the potential buyers who may be interested and prima facie suitable. With the upfront buyer condition this time period is typically cut short and the learning curve thus very steep. The monitoring trustee does not know the business well and issues have not arisen yet under his watch. It therefore becomes difficult to know what clauses in the transaction agreements may be problematic and how the agreements being negotiated will continue to evolve.

3. DISCUSSION AND CONCLUSIONS

In this paper I have discussed four major challenges of designing and implementing timely and effective remedies in merger control. Of these, the increased complexity is the most important challenge.

A complex design of merger remedies leads to complexity in the implementation and monitoring the effectiveness of remedies. While not new (e.g. EU state aid remedies during the financial crisis 2008/2009, or complex remedies in media or telecoms mergers in US, France and EU are a case in point), I have recently observed an increase in complexity at several levels. First there are legal and institutional complexities arising through global mergers and present major challenges for competition authorities and the coordination of remedies. Economic complexity is also introduced in innovation remedies where the ability of incentive to compete of a purchaser of divestment business and/or assets needs to be assessed very carefully and often under tight time constraints in upfront buyer cases. The third challenge which exacerbates and reinforces the two challenges discussed above has to do with the

32 See paragraph 98, *supra*.

increased urgency through the increased use of up-front buyer provisions in divestiture commitments.

This raises the question whether there is a limit to the degree of complexity a merger control review leading to complex remedies can tolerate and what if anything can and should be done. Is it simply a question of allowing for more time and require more resources? Should overly complex competition issues leading to complex remedies be rejected as too big to fix? Or is it a question of relying on *ex-post* reviews of remedies and modifications of commitments by the authorities within a certain time period? These are important questions.

Before I provide my own views, I would like to refer to the discussion raised by the Bayer/Monsanto case[33] where this question whether the transaction was too big to fix was asked and the recently retired head of the compliance division of the FTC, Daniel Ducore, felt compelled to answer with a letter to the American Antitrust Institute (AAI). The AAI had criticized the remedy for raising "execution risk". Ducore´s letter discusses the broad scope of the remedy, the risks that remain, and some suggestions for how the Antitrust Division should continue to review this particular remedy in the years following its implementation and share its learning with the public.[34] In his robust defense of the settlement, which is a fix-it-first remedy and makes the approved buyer BASF party to the settlement although it is not a named defendant in the Complaint, Ducore points out one of the more unusual aspects of the decree, namely to reduce the "asset package risk" to near zero by allowing BASF within the first year following divestiture, to obtain any additional assets if such assets have been "previously used by" the Divestiture Businesses and are "reasonably necessary" for the businesses continued competitiveness. The final decision lies with the DOJ in its sole discretion and Ducore acknowledges that "… *it is rare that either the Division or the FTC has provided for the buyer's reaching back to obtain additional assets*."

I believe this case illustrates very well the dilemma of complex mergers requiring broad and complex remedies. I fully agree with Ducore that *ex-post* reviews are essential to inform and reassure the public and that the antitrust authorities are held accountable for such high-profile decisions.

33 Decision (EC), M.8084 – *Bayer/Monsanto*. Please note that the author was a senior advisor to the trustee monitoring the implementation of the Commitments globally.

34 Ducore, 2018.

More generally, it is in my view very important that regular *ex-post* reviews of decisions of competition authorities are undertaken and published. The UK CMA does so regularly and is to be complimented for this. The CMA builds on a rolling programme of *ex-post* evaluations of merger decisions started by the UK Competition Commission (one of its predecessor bodies) in 2004 and offers a number of learning points regarding merger remedies policy and different types of remedies. Among the general lessons is the need for parties to have appropriate incentives to implement remedies and the limited circumstances in which behavioural remedies might be effective (Hoehn, 2018).

The most recent CMA report further refers to the conclusions regarding the need to recognise the difficulties of selling selected assets rather than on-going (e.g. stand-alone) business and the need for sufficient information to be provided to potential purchasers.[35] The CMA report also highlights an observation made by the FTC in its 2017 remedy study that there was a reluctance of some buyers to raise concerns with FTC or an independent monitor and that the FTC needed to impress on affected parties to raise issues when they arise. In the opinion of the CMA there is an important difference between the US/Canadian and EU systems in that DG Comp can only consider remedy proposals offered by the parties. While it has the ability to decline those proposals the only real alternative is to propose and prepare for a prohibition decision. The CMA believes that this may lead to "*problems related to an inadequate scope of divestiture packages and perhaps also to a lack of suitable purchasers*".

From my own experience, and as discussed in this paper, I would further advocate that the status of purchaser reviews in EC merger control is enhanced and the Trustee given more time to evaluate the suitability of a proposed purchaser, particularly in complex merger remedies that require economic analysis of competition and innovation effects and sometimes alos common ownership structures. One week is clearly not enough! The Trustee also will require sufficient resources to evaluate such complex effects. These resources are not only those that economists can provide but also external legal and industry expertise. This means that the appointment of a suitably qualified trustee or trustee team becomes central to the successful implementation of a complex remedy. It is not surprising that in my experience the

35 CMA – Competition & Market Authority, 2019.

European Commission has insisted on the inclusion of a technical expert as a key member of a trustee team.

While I have focused in this paper on the challenges that typically arise in merger control, I would like to point out that there is at least one more challenge that deserves to be considered but is beyond the scope of this short paper: the design of effective remedies in the digital data economy. This point has become the focus of much public debate triggered by the publication of various expert reports by the US and UK Governments, the Director General of DG Competition and a number of national competition authorities around the world who have become concerned about the competition implication of big data, big tech and the growth of artificial intelligence (AI) and machine learning solution in today´s economy.[36] The issues raised by these reports relate not to only to the complexity of analysis of competition issues in antitrust cases but also to merger control involving the acquisition of actual or potential competitors and start-ups that have promising technologies (e.g. Facebook/WhatsApp, Microsoft/LinkedIn) and have a direct bearing on the question how to remedy any competition problems identified. For example, the academic expert panel advising the DG Competition, consisting of Crémer; Montjoye & Schweitzer (2019) suggests more sharing of data alongside other suggestions on how EU Competition Policy should deal with increased scope for market power through digital platforms by shifting burden of proof of beneficial impact of certain behaviour for dominant platforms including acquisition of start-ups. Furman et al (2019) advising the UK Government propose the creation of digital market unit alongside suggestions for greater personal data mobility and remedies involving greater data openness as has been applied in the 2016 Open Banking Orders of the CMA[37]. And the US Federal Trade Commission has investigated a breach by Facebook of its 2011 privacy commitments, leading to a $5 billion penalty for Facebook.[38] What these proposals would mean for the effective implementation of remedies and what challenges these would represent for a monitoring trustee or any regulatory agency entrusted with overseeing these remedies can without a detailed assessment of these proposal only be speculative. But is it reasonable to assume that the challenges

36 Crémer; Montjoye & Schweitzer, 2019. Furman et al, 2019.

37 See CMA – Competition & Market Authority, 2016.

38 Facebook Settlement with the FTC, July 24, 2019 See https://www.ftc.gov/news-events/blogs/business-blog/2019/07/ftcs-5-billion-facebook-settlement-record-breaking-history, accessed 19 August 2019.

will be similar to the ones discussed in this paper as the issues raised by the digital data economy are by their nature they are bound to be complex and requiring a careful balancing of innovation and competition effects of remedies involving extensive data sharing, data portability, data and protocol interoperability, never mind structural remedies that are increasingly being advocated at the political level.

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RIGHT OF DEFENCE – ARTICLE 3 OF THE ECN+ DIRECTIVE

Marta Campos

Abstract *This text focuses on the right of defence recognized by article 3 of the ECN+ Directive in a comparative perspective between the level of protection granted by the EU Competition Law Proceedings, that provides for the minimum standard to all Member States, with the level of protection granted by the Portuguese Legal System, and see if we reach this minimum standard.*

1. INTRODUCTION

In this text, I am going to talk about the right of defence, which is one of the rights recognized by Article 3 of the Directive aiming at harmonizing the powers of national competition authorities (hereafter "ECN+ Directive")[1].

As stated in recital 14 of the ECN+ Directive, national competition authorities (hereafter "NCAs"), in cases related to Articles 101 and 102 of the Treaty on the Functioning of the European Union (hereafter "TFUE"), should at least comply with the general principles of Union law and with the Charter of Fundamental Rights of the European Union, according with the case law of the Court of Justice of the European Union (hereafter "CJEU"). This means that we can consider the EU Competition Law Proceedings the minimum standard to all Member States.

1 Directive (EU) 2019/1 of the European Parliament and of the Council of 11 December 2018 to empower the competition authorities of the Member States to be more effective enforcers and to ensure the proper functioning of the internal market.

It is important to note that this minimum is not as low as we might think. In a recent text[2], Bernatt, Botta & Svetlicinii made the comparison between the level of protection granted by EU Competition Law Proceedings to the right of defence with the level of protection granted by the legal systems of some of EU countries[3]. They came to the conclusion that the level of protection given by the EU Competition Law Proceedings is stronger.

What I'm going to do is compare the level of protection granted by EU Competition Law Proceedings with the level of protection granted by the Portuguese Legal System, and see if we reach this minimum standard.

2. CONTENT OF THE RIGHT OF DEFENCE

The right of defence was recognized for the first time by the CJUE in *Hoffmann La Roche*. According to the CJUE "*the right of defence is a fundamental principle of Community law which must be complied with (by the European Commission) even if the proceedings in question are administrative proceedings.*"[4]. This right includes several sub-rights, namely the following: (i) the right to be informed – Article 3(2) and (3); (ii) the right to be heard – Article 3(2); (iii) the right to access the file; (iv) the privilege against self-incrimination; (v) and the legal professional privilege. I will analyze each of these sub-rights.

2.1. Right to be informed

Starting with the right to be informed, we find in EU Competition Law Proceedings several manifestations of this right.

The first and most important is the statement of objections, where the Commission sets-out its preliminary position on the alleged infringement of Articles 101 and/or 102 TFEU, after an in-depth investigation[5]. Its purpose is to give the parties concerned the information they need to exercise their defence. In the Portuguese legal system we have the Note of illegality

2 Bernatt, Botta, & Svetlicinni, 2018.

3 The countries were: Bulgaria; Croatia; Czech Republic and Slovakia; Hungary; Poland; and Romania.

4 C-85/76, *Hoffmann-La Roche & Co. AG v. Commission*, ECLI:EU:C:1979:36, p. 9. Such statement is codified today in Recital 37 in the preamble of Reg. 1/2003.

5 See Article 27(1) of Council Regulation (EC) No 1/2003 of 16 December 2002, Article 10 of Commission Regulation (EC) No 773/2004 of 7 April 2004 and European Commission, 2011:3.1.1.

– Competition Act, Articles 24(3), a), and 25(1) – which has the same function as the statement of objections.

Another important manifestation of this right is the *supplementary statement of objections* and the *letter of facts*[6]. The supplementary statement of objections is used in two cases: when the Commission wants to change the facts, due to the production of new evidence; and when the Commission wants to change the legal basis to the disadvantage of the parties concerned. The letter of facts is used when new evidence is produced, but with no implications to the facts stated in the statement of objections. The letter of facts informs the parties of the new evidence. In the Portuguese legal system we also have the "Supplementary" note of illegality, when the Portuguese Competition Authority (hereafter "AdC") wants to change de facts or the legal basis, as well as a notification of new evidence which has the same function as the letter of facts[7].

In addition to these information means, the Commission provides information at different stages of the proceedings – an example of that is when the Commission informs the parties subject to investigations pursuant to formally opening the proceedings[8]. In the Portuguese legal system, we don't have specific legal rules on other information at different stages of the proceedings, but I think that, in general terms, information should be provided at any stage of the proceeding when it is necessary for the exercise of the defence, such as when the AdC applies an interim measure or when it addresses requests for information or documents. In requests for information or documents, the Portuguese Competition Court has already ruled in case nr. 228/18.7YUSTR-A that the AdC has to inform the relevant party of the facts that led to the investigation so that the party can control the necessity of the request. However, this understanding is not yet well established in practice by the AdC.

2.2. Right to be heard

About the right to be heard, in EU Competition Law Proceedings there are two ways to exercise it.

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6 See European Commission, 2011:3.1.7. and also Case 54/69, *SA française des matières colorantes (Francolor) v. Commission*, ECLI:EU:C:1972:75. pp. 16 –17.

7 Portuguese Competition Act, Article 25(5) and (6)).

8 Bernatt, Botta & Svetlicinii, 2018: 7.

One way is the written reply to the Statement of Objections, where the parties concerned can express their point of view, can present documents and may require the production of other means of proof.[9] The time-limit can be set with some flexibility depending on the circumstances of the case. This is very important, because cases are not all the same in terms of complexity and a fixed deadline may not be applicable to all types of cases, thus potentially jeopardizing the effective exercise of the right of defence in cases of greater complexity.

The other mean is the Oral Hearing, to be conducted by a fully-independent Hearing Officer, and where the parties can present their arguments, and natural persons can be heard[10].

In the Portuguese Legal System we also have these two ways to exercise the right to be heard, and the time-limit to present the written reply to the note of illegality can be set with some flexibility depending on the circumstances of the case[11]. The only difference is that in our case oral hearing is not conducted by a Hearing Officer in full independence. This difference is important because powers are all concentrated on the same authority, although it is not a decisive one for any failure during the oral hearing may be subject to review by the court.

2.3. Right to access the file

About the right to access the file, in EU Competition Law Proceedings the rule is the access to the file after the statement of objections is issued[12]. In the Portuguese Legal System the rule is the access both before and after the statement of objections is issued[13].

There are exceptions in the two systems[14], the most important of which, in practice, is related to business secrets. In both systems these secrets are

9 Article 27(1) of Council Regulation (EC) No 1/2003 of 16 December 2002, Article 10 (2) and (3) of Commission Regulation (EC) No 773/2004 of 7 April 2004 and European Commission, 2011:3.1.4.

10 Portuguese Competition Act, Article 25(1).

11 Portuguese Competition Act, Articles 25(2) and 26.

12 Article 27(2) of Council Regulation (EC) No 1/2003 of 16 December 2002, Article 15 of Commission Regulation (EC) No 773/2004 of 7 April 2004 and European Commission, 2011: 3.1.2..

13 Portuguese Competition Act, Article 33(1).

14 In the EU Competition Law Proceedings the exceptions are: business secrets, other confidential information and internal documents of the Commission or of the competition authorities of the Member States, like correspondence between the Commission and the competition authorities of the Member States or between the latter – see Article 27(2) of Council Regulation (EC) No 1/2003 of 16 December 2002, Article 15 (2) of Com-

protected. This protection may give rise to very serious problems when accessing confidential information is necessary for the exercise of the right of defence. However, both systems have procedures for facilitating the exchange of confidential information between parties to the proceedings. So, in EU Competition Law Proceedings, we have the negotiated disclosure to a restricted circle of persons and the data-room procedure[15]. In Portuguese Legal System, we have access restricted to the lawyer or economic adviser for the exercise of the right of defence; reproduction or use of information for any other purpose is not permitted[16].

I think that Portuguese rules about this reconciliation are not completely clear and raise some problems of interpretation, one of which is whether the legal standard means that documents classified as confidential can only be consulted in a data-room. I think the legal rule on this subject is not very clear, and this is only a possible interpretation. For this reason I think this issue should be more subject to discussion and needs further clarification.

2.4. Privilege against self-incrimination:

About the privilege against self-incrimination, the Portuguese Legal System is equal to the EU Competition Law Proceedings, as it follows the case law of the Court of Justice on this matter. So for us, like in the EU Competition Law Proceedings, the subjective scope of the privilege includes the legal person. Note that some legal systems – such as in Germany and in the United States – do not recognize this right to legal persons, only natural persons. The objective scope only includes "directly" self-incriminatory information. It does not include preexisting documents, even if they are directly self-incriminatory, nor information not directly self-incriminatory[17].

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mission Regulation (EC) No 773/2004 of 7 April 2004 and European Commission, 2011: 3.1.2. and 3.1.3. In the Portuguese Legal System some exceptions are: before the note of illegality when the entire file is classified as confidential to protect investigation and access could undermine the investigation; and after in relation to documents that contain information classified as confidential, such as business secrets (Portuguese Competition Act, Article 33(2), and (4))

15 See European Commission, 2011:3.1.3.

16 See Portuguese Competition Act, Article 33(4).

17 See: C-374/87, *Orkem v. Commission*, ECLI:EU:C:1989:387, pp.34-35; joined Cases C-238/99, C-244/99, C-245/99, C-247/99, C-250/99 to C-252/99 and C-254/99, *Limburgse and others v. Commission*, ECLI:EU:C:2002:582, p. 273; joined Cases C-204/00, C-205/00, C-211/00, C-213/00, C-217/00 and C- 219/00, *Aalborg Portland and others v. Commission,* ECLI:EU:C:2004:6, pp. 61-65; joined Cases C-65/02 and C-73/02, *ThyssenKrupp v. Commission*, ECLI:EU:C:2005:454, p. 49; C-301/04, *SGL Carbon and others v. Commission*, ECLI:EU:C:2006:432, pp. 39-49; C-407/04, *Dalmine SpA v. Commission*, ECLI:EU:C:2007:53, p. 34; joined Cases

I think there remain two open questions related to the privilege against self-incrimination.

The first is the objective scope of the privilege in the case of natural persons. In this case there are specific reasons for protecting the right against self-incrimination which do not apply to legal persons, for example related to the dignity of the human person, which may justify a wider objective scope. This point is important to us because in our system natural persons may be subject to sanctions. I think Article 31 of the directive allows for this understanding.

The second is related to pre-existing documents and a theory that exists in United States concerning the act of delivering the document, because as it is a form of communication, it has a meaning and that can lead to the admission of the infringement. There is also an important difference between the pre-existing document and the act of delivering. The former is produced outside the proceeding; this means that is not contaminated with the strategic thinking originated by the proceeding. On the other hand, the act of delivering is produced within the proceeding. I think that is an open question that needs further discussion and clarification.

2.5. Legal professional privilege:

In EU Competition Law Proceedings the objective scope includes: written communications between the lawyer and its client made for the purpose and interest of the exercise of the client's rights of defence. It covers communications both exchanged after the initiation of the administrative proceedings or earlier written communications, which have a relationship to the subject-matter of that same proceeding; preparatory documents, even if they have not been exchanged with a lawyer or have not been created to be transmitted to a lawyer, provided that they have been drawn-up exclusively for the purpose of requesting legal advice from a lawyer in the exercise of the right of defence[18].

C-125/07, C-133/07, C-135/07 and C-137/07, *Erste Group Bank AG and others v. Commission,* ECLI:EU:C:2009:576, p. 271; T-34/93, *Société Générale v. Commission,* ECLI:EU:T:1995:46, pp. 72-75; T-112/98, *Mannesmannröhren-Werke AG v. Commission*, ECLI:EU:T:2001:61, pp. 63-67; Joined Cases T-236/01, T-239/01, T-244/01 to T-246/01, T-251/01 and T-252/01, *SGL Carbon and others v. Commission,* ECLI:EU:T:2004:118, pp. 403-407.

18 C-155/79, *AM&S Europe Limited* v. *Commission*, ECLI:EU:C:1982:157; joined Cases T-125/03 and T-253/03 *Akzo Nobel Chemicals and Akcros Chemicals* v *Commission*, ECLI:EU:T:2007:287, as confirmed by case C-550/07 P, *Akzo Nobel Chemicals and Akcros Chemicals* v *Commission*, ECLI:EU:C:2010:512, and European Commission, 2011:2.7.

In the Portuguese Legal system – according to a certain interpretation of the law – the scope can be broader, because its legal basis does not derive from the Portuguese Competition Act, but from the Legal Profession Act, which provides for a wider scope. In any case, the Legal professional privilege in the Portuguese Legal system includes, at least, the same communications that are included in EU Competition Law Proceedings.

Concerning the subjective scope, Legal professional privilege under EU Competition Law Proceedings includes only communications emanating from independent lawyers, i.e. lawyers who are not bound by a relationship of employment with the client.

In the Portuguese legal system the law is not clear, but there seems to be some understanding in the sense that the Legal professional privilege includes in-house lawyers. This was the position of the AdC adopted in the guidelines and also by the Commercial Court of Lisbon in case nr. 572/07.9TYLSB. This can raise problems. not related with the right of defence, but with the principle of effectiveness, since a wider protection will reduce the public enforcement exercised by the AdC in the protection of competition.

Finally, in EU Competition Law Proceedings there are clearer proceedings during an inspection, thus preventing the Commission from becoming aware of the content of the documents before a final decision by the CJEU.

In Portuguese legal system, when inspections are not conducted in the lawyer's office, these proceedings are not defined by the law.

3. CONCLUSIONS:

The foregoing analysis leads me to three conclusions:

(i) Firstly, the level of protection granted by the Portuguese legal system is practically equivalent to that granted by EU Competition Law Proceedings. However, there are some aspects that need further consolidation in practice or greater clarification such as: the information given by the AdC in requests for information and documents; the conciliation between the right of defence and business secrets; the privilege against self-incrimination in relation to natural persons and the application of the theory of the act of delivering when it concerns the delivering of pre-existing documents, leading to confession of the facts; the proceedings during an inspection by the AdC related to the legal professional privilege.

(ii) EU Competition Law Proceedings provides for the minimum standard, which means that Member States can go beyond this standard, awarding more protection. However, in certain cases going beyond this minimum may raise problems related to the principle of effectiveness.

(iii) In general terms, we must end the litigation around fundamental rights on matters that are already consolidated and no new arguments or perspectives are presented. However, we should not wish to end the litigation around fundamental rights when new arguments, new perspectives, new rights or new dimensions of protection are presented, as it fosters more perception, more complexity, more deepness and, in the end, more justice.

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CONTROLLING ALGORITHMIC COLLUSION: SHORT REVIEW OF THE LITERATURE, UNDECIDABILITY, AND ALTERNATIVE APPROACHES

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Abstract *Algorithms have played an increasingly important role in economic activity, as they become faster and smarter. Together with the increasing use of ever larger data sets, they may lead to significant changes in the way markets work. These developments have been raising concerns not only over the rights to privacy and consumers' autonomy, but also on competition. Infringements of antitrust laws involving the use of algorithms have occurred in the past. However, current concerns are of a different nature as they relate to the role algorithms can play as facilitators of collusive behavior in repeated games, and the role increasingly sophisticated algorithms can play as autonomous implementers of pricing strategies, learning to collude without any explicit instructions provided by human agents. In particular, it is recognized that the use of "learning algorithms" can facilitate tacit collusion and lead to an increased blurring of borders between tacit and explicit collusion. Several authors who have addressed the possibilities for achieving tacit collusion equilibrium outcomes by algorithms interacting autonomously, have also considered some form of ex-ante assessment and regulation over the type of algorithms used by firms. By using well-known results in the theory of computation, I show that such option faces serious challenges to its effectiveness due to undecidability results. Ex-post assessment may be constrained as well. Notwithstanding several challenges faced by current software testing methodologies, competition law enforcement and policy have much*

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to gain from an interdisciplinary collaboration with computer science and mathematics, in particular by analyzing how such testing methodologies may help define the scope and limits of legal enforcement.

I. INTRODUCTION

Algorithms have played an increasingly important role in economic agents' decision making and in economic activity in general[1]. They have been present in some markets and industries for a long time: in finance and banking, insurance, airlines, food retail, e-commerce, and in many other industries. However, their use is becoming widespread, especially across more advanced economies, namely in e-commerce and in the definition and implementation of pricing strategies in general, as algorithmic pricing software becomes increasingly affordable even to smaller businesses[2]. Moreover, algorithms are becoming faster and smarter which, together with the increasing use of ever larger data sets by market participants, may lead to significant changes in the way markets work[3].

The use of algorithms by suppliers and consumers can both benefit and hurt consumer welfare[4]. For example, by reducing information and transactions costs, e.g., by making widely available product comparison sites, they allow disposable income to go further, enabling more consumers to consume more and make better choices. On the other hand, through the use of ever increasing big data sets on individual consumers' habits and behavioral patterns, algorithms can increase the scope for personalized pricing by suppliers,

1 An "algorithm" can be defined as a finite sequence of instructions, expressed in a precise manner and based upon a certain alphabet, such that, when confronted with a question of some kind and carried out in the most literal-minded way, will invariably terminate, sooner or later, with the correct answer. Notice that this does not constitute a mathematical definition. There is no agreed upon mathematical definition of "algorithm". Sometimes the term "effective procedure" is used instead of the term "algorithm".

2 Amazon, Google, Microsoft and other companies supply off-the-shelf machine learning solutions and computing capability – see Calvano et al. (2018).

3 As pointed out by Petit (2017), a common thread to the emerging literature on Antitrust and Artificial Intelligence Literature (AAI), is to describe the increasing use of algorithms on markets as a "game changer".

4 On the use of algorithms by consumers, and its effects on markets and welfare, see Gal & Elkin-Koren (2017).

leading to a larger appropriation of consumer surplus, even if such personalized pricing may render price collusion less attractive and more difficult to sustain in equilibrium.

These developments have been raising some concerns not only over the rights to privacy and consumers' autonomy, but also over the way markets work and on the level of competition they can sustain.

Infringements of antitrust laws involving the use of algorithms have occurred in the past. As an example, recall the Airline Tariff Publishing Case, dealt with by the US Justice Department and settled with a consent decree in March 1994, eight major US airlines colluded to raise prices and restrict competition in the airline industry. Collusion was sustained through the transmission of relevant information via the Airline Tariff Publishing Company (ATPCO), such as information on "first and last ticket dates" and on "first and last travel dates"[5].

In the more recent *US v. David Topkins Case*, a US District Court ruled that Title 15, US Code, Section 1, had been violated. David Topkins apparently had coded an algorithm that enabled him and his co-conspirators to agree to fix the prices of certain posters sold in the US through Amazon Marketplace[6].

In December 2015, a UK citizen was indicted for an allegedly similar price fixing strategy applied to posters sold through the online site Amazon Marketplace. The indictment, unsealed on December 4th and originally filed in the Northern District of California on August 27th, 2015, names the UK citizen Daniel Aston and his company named "Trod", doing business as "Buy 4 Less", as conspiring to fix prices for online posters sales from September

5 As reported in the March 18th, 1994, issue of The New York Times, "*Anne K. Bingaman, Assistant Attorney General in charge of the antitrust division, said the airlines used the Airline Tariff Publishing system 'to carry on conversations just as direct and detailed as those traditionally conducted by conspirators over the telephone or in hotel rooms. Although their method was novel, their conduct amounted to price-fixing, plain and simple,' she said*". According to Borenstein (2004), "*While an agreement among competitors to fix prices is per se illegal, computer technology that permits rapid announcements and responses has blurred the meaning of 'agreement' and has made it difficult for antitrust authorities to distinguish public announcements from conversations among competitors*" – See also Klein (1999). The Airline Tariff Publishing system is the property of the Airline Tariff Publishing Company (ATPCO) a corporation owned by several airlines, formed to serve as agent for those owners (and for other airlines or vendors) to file and publish tariffs and related products. It operates as a clearinghouse for distribution of fare change information. At least once a day ATPCO produces a compilation of all industry fare change information and sends the computer file, containing thousands of fare changes, to a list of recipients that includes all major airlines and the computer reservations systems operating in the US – see Borenstein (2004).

6 Ruling by the US District Court, Northern District of California, San Francisco Division, April 2015.

2013 to January 2014. According to Aston's indictment, he used commercially available algorithm-based pricing software to fix the prices of posters sold on Amazon Marketplace[7].

In the *Eturas Case* (Case C-74/14), the European Court of Justice (CJEU) dealt with concerted practices between travel agents through the use of an online platform. The alleged coordination would have taken place via an online travel booking system (E-turas, owned by Eturas) used by more than 30 travel agents in Lithuania. The Lithuanian Competition Council (LCC) imposed fines on Eturas and these 30 travel agencies for applying a common cap on discounts applicable to services provided through the Eturas online booking platform. The discount cap was communicated to the agencies through an internal messaging system in the form of an amendment to the platform terms and conditions. It was then implemented by Eturas using technical means[8].

Online platforms may facilitate an unlawful cooperation between platform users without involving their direct contact. These examples may involve the use of "adaptive algorithms", to borrow a terminology used in Calvano et al. (2018)[9].

The greatest concerns recently expressed in the literature on competition law and policy relate: (i) to the role algorithms in general can play as facilitators of collusive behavior in repeated games[10], and (ii) the role increasingly sophisticated algorithms can come to play as autonomous implementers of pricing strategies which, through their strategic interaction and their access

7 For this case involving Daniel Aston, see MLex, 26 Feb 2016.

8 See C-74/14, *Eturas e o.*, EU:C:2016:42, http://competitionlawblog.kluwercompetitionlaw.com/2017/01/19/eturas-conclusions-platform-collusion/. The authors of this blog rightly claim that "(…) *the Eturas decision demonstrates how information technology can distort markets in the digital space*."

9 As described by Calvano et al. (2018), an "adaptive algorithm" incorporates a model of the market and seek to maximize the firm's profit. An example is provided by "dynamic pricing for revenue management", used in hotel booking and airline services. It may estimate market demand using data on sold quantities and prices, and then will estimate the optimal price given the estimated demand and the firm's rivals past behavior (prices charged, etc).

10 See Mehra (2016) for a thorough discussion of the role played by "robo-sellers". The author adds that "*The rise of the robo-seller exacerbates antitrust law's longstanding weakness at addressing social harm from oligopoly. Black-letter law's blind spot when it comes to independent price coordination—that is, without overt acts such as communication or the adoption of facilitating practices—may become a cloaking device behind which algorithmic price coordination can readily hide. Additionally, the challenges that face explicit collusion by oligopolists may become easier to surmount with mass data collection and algorithmic assistance*." I believe this assertion calls for further work. As stated by Mcsweeny (2017), "*We have a lot to learn about the effects of pricing algorithms and AI. Further research will contribute to better and more effective competition enforcement in this area*."

to large data sets (made up of market information on prices, sales, and other relevant variables for the definition and implementation of pricing strategies), become capable of adapting over time and of learning to collude without any explicit instructions provided by human agents[11, 12]. In particular, it is recognized that the use of "learning algorithms" can facilitate tacit collusion and lead to an increased blurring of borders between tacit and explicit collusion[13], as they are not programmed with the intent of converging to a collusive equilibrium outcome but can reach it through learning and intelligent adaptation[14]. Moreover, their choices, namely of pricing strategies, and subsequent implementation, would be unencumbered by moral and ethical

11 Competition issues raised by this type of algorithms have been analyzed by Ezrachi & Stucke (2015), namely under the categories of collusion they call "Predictable Agent" and "Autonomous Machine".

12 Quoting the OECD Report (2017) "*Artificial intelligence [AI] refers to the broad branch of computer science that studies and designs intelligent agents, who should be able to carry out tasks of significant difficulty in a way that is perceived as 'intelligent'. (…) At the initial stages of AI, machines were programmed with extensive lists of detailed rules in order to attempt to replicate human thoughts, which could easily become a burdensome process. AI became a more effective tool after the development of algorithms that teach machines to learn, an idea that evolved from the study of pattern recognition and learning theory, and which would establish the new branch of machine learning. Machine learning (ML) is a subfield of AI which designs intelligent machines through the use of algorithms that iteratively learn from data and experience. (…) machine learning gives 'computers the ability to learn without being explicitly programmed'. Machine learning algorithms can be classified into three broad categories, depending on their learning pattern (Anitha et al.: 2014): (i) Supervised learning, where the algorithm uses a sample of labelled data to learn a general rule that maps inputs to outputs; (ii) Unsupervised learning, where the algorithm attempts to identify hidden structures and patterns from unlabeled data; (iii) Reinforcement learning, where the algorithm performs a task in a dynamic environment, such as driving a vehicle or playing a game (…) and learns through trial and error*."

13 Following OECD (2017): "*Economists usually distinguish between two forms of collusion, explicit and tacit. Explicit collusion refers to anti-competitive conducts that are maintained with explicit agreements, whether they are written or oral. The most direct way for firms to achieve an explicit collusive outcome is to interact directly and agree on the optimal level of price or output. Tacit collusion, on the contrary, refers to forms of anti-competitive co-ordination which can be achieved without any need for an explicit agreement, but which competitors are able to maintain by recognizing their mutual interdependence. In a tacitly collusive context, the non-competitive outcome is achieved by each participant deciding its own profit-maximizing strategy independently of its competitors.* (…) *Contrary to the economic approach, which considers collusion a market outcome, the legal approach focuses on the means used by competitors to achieve such a collusive outcome. For this reason, competition laws generally do not prohibit collusion as such, but prohibit anti-competitive agreements. If collusion is the result of such as agreement then an infringement of the law can be successfully established. Although there is great variance in how jurisdictions interpret the notion of agreement, they traditionally require some sort of proof of direct or indirect contact showing that firms have not acted independently from each other (the so-called 'meeting of the minds')*." For an economic analysis of "tacit collusion", see Ivaldi et al. (2003). See also Kaplow (2011).

14 See Klein (2019) for an example of how autonomous "Q-learning algorithms" are able to achieve supra-competitive profits in a stylized oligopoly environment with sequential price competition. See also Calvano et al. (2018).

considerations and constraints, or other human behavioral "biases", unlike the case with human economic agents[15]. In this sense, the evolution of artificial intelligence is bringing once more to the fore the persistently controversial distinction between tacit and explicit collusion. A distinction that may be of little consequence in economic theory but is very relevant in competition law and policy[16].

At least part of the competition law and economics community recognizes this challenge, to the point of questioning whether the existing antitrust regimes across many jurisdictions are capable to meet it[17]. For example, it has been pointed out that antitrust legislation was drafted having human agents in mind. Concepts such as "meeting of the minds", "mutual understanding", "mutual assent", "concurrence of wills"[18], can hardly be applied to the case of autonomous artificial agents[19], if they cannot be regarded as mere tools used by firms (otherwise firms would undoubtedly remain liable for their own collusive behavior), but behave as truly autonomous agents[20]. As pointed out by Mcsweeny (2017), "*Concerns about algorithmic tacit collusion are still largely theoretical at this point. Nonetheless, recent examples suggest that the concern is not fanciful.*"

15 Unless and until algorithms may be so sophisticated as to take into account ethical and moral considerations. In any case, it is certainly already possible to program algorithms to take into consideration certain simple ethical rules such as "split the gain in half".

16 See e.g., Kaplow (2011).

17 As referred by Kroll et al. (2017): "*(…) the accountability mechanisms and legal standards that govern decision processes have not kept pace with technology. The tools currently available to policymakers, legislators, and courts were developed primarily to oversee human decision makers. Many observers have argued that our current frameworks are not well-adapted for situations in which a potentially incorrect, unjustified, or unfair outcome emerges from a computer*." – p. 636. However, in a recent intervention, Ohlhausen (2017), Acting Chairman, U.S. Federal Trade Commission, stated that from an antitrust perspective, the expanding use of algorithms raises familiar issues that are well within the existing canon (i.e., within the existing competition legislation and policy).

18 See e.g., Kaplow (2011) for an analysis of some of these concepts and others, such as "conspiracy", "collusion", "parallelism", and "conscious parallelism". Behind the concept of "meeting of the minds" is, or at least seems to be, the well-defined concept of "common knowledge" in game theory. About this latter concept, see e.g., Fudenberg & Tirole (1991). See Aumann (1976) for a mathematical definition of "common knowledge", starting with some *probability space* on the "states of the world", and using the topological notions of *join* and *meet* of sets. See also Lewis (2002) for a more philosophical discussion of this concept.

19 The term "Autonomous Artificial Agent" is used by Harrington and is defined as "a software program that carries out a set of operations on behalf of a human agent without intervention by this agent, and does so with some knowledge of the human agent's objective" – see Harrington (2019: 333).

20 See e.g., Mehra (2016) and Harrington (2019).

The challenge goes beyond liability. For example, the EU can assert that "(…) *companies should ultimately be held responsible for the activities of any algorithm or pricing software they deploy*", and that *"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*."[21] But that does not prevent that the use of increasingly sophisticated algorithms will make collusion more difficult to detect and prosecute, even if the design and use of algorithms may be regarded as a "plus factor" to "an agreement" between firms employing such algorithms[22].

II. ALGORITHMIC COLLUSION

The use of algorithms in game theory goes a long way back. In particular, several authors[23] have analyzed the play of non-cooperative games and their equilibria when finite automata play the game as models of rational players with limited memory and reasoning capacity. Such capacity can be measured by the number of states in each finite automaton[24]. The study of algorithms as collusive devices has been somewhat more recent[25].

In a recent paper, Salcedo (2015) explores a symmetric dynamic model of price competition with two firms, where firms choose pricing algorithms (henceforth, PA's) simultaneously and independently at the beginning of the repeated game. He shows that when four conditions are met simultaneously, namely, firms set prices through algorithms that can respond to market

21 See Vestager (2017).

22 See Gal & Elkin-Koren (2017: 346/7), albeit these two authors discuss "plus factors" in the context of consumer algorithms. See also Gal (2019: 110). A "plus factor" is to be understood as additional economic circumstantial evidence that, together with parallel conduct by different firms, e.g., a parallel movement in prices, can merit an investigation under antitrust legislation – see Kovacic et al. (2011). Such investigation is merited when all alternative explanations for such parallel movement, but for some sort of agreement between firms, are non-credible. See also Chopra & White (2011) and Buyers (2018) for a discussion of artificial Intelligence liability.

23 See Rubinstein (1986, 1998), Gilboa (1988), and Kalai (1990), among other authors. See also Conlisk (1996).

24 See annex 2 for a formal definition of "finite automaton", or Lewis & Papadimitriou (1981). The finite automata that implement pre-defined repeated game strategies are "Moore machines", as their output is not necessarily binary – see annex 2. There are ways of measuring the complexity of Moore machines other than just their number of states. E.g., the Moore machine implementing the "grim trigger strategy" in the infinitely repeated prisoner's dilemma game can be regarded as simpler than the one implementing "tit-for-tat". In fact, both machines have two states but the transition function is simpler for the "grim trigger" strategy.

25 See additional discussion in Schwalbe (2018).

conditions, these algorithms are fixed in the short run, can be decoded by the rival, and can be revised over time, then every equilibrium of the game leads in the long run to monopolistic, or collusive, profits. He claims his findings provide theoretical support for the idea that optimal use of PAs is an effective tool for tacit collusion and that the similar results will be attained in the context of general repeated games and not just a pricing duopoly.

In another recent paper, Klein (2019) shows how in a stylized duopoly environment with a homogeneous good, unrestricted production capacity, and with repeated sequential price competition, independent "Q-learning algorithms" are able to achieve higher-than static prices and profits. According to the author, his result provides ground for competition authorities and regulators to remain vigilant when observing the rise of autonomous PAs in the marketplace, in particular in cases where firms may be short-run price committed. He also claims that the general framework used in the paper may be used to similarly assess the capacity of other, perhaps more advanced algorithms to collude in various environments.

In another paper, Calvano et al. (2018) put forth five important questions, namely: (i) Can "smart" PAs learn to collude? (ii) Is collusion among algorithms any different from collusion among humans? (iii) In particular, is algorithmic pricing conducive to collusion more often than what humans could do? If the answers to these questions are affirmative, further issues will arise: (iv) How can we detect algorithmic collusion? (v) What are the appropriate new standards for competition policy?

In my paper I deal with questions (iv) e (v). If the answer to questions (i) and (ii) is a clear "no", then there is not much to say that has not been said before. Hence, my paper is only relevant if we cannot give such a clear negative answer to both questions.

The authors also distinguish between "adaptive algorithms" and "learning algorithms", claiming that the serious challenges to current competition legislation and policy come from the latter. As referred in their paper, and contrary to "adaptive algorithms", learning (pricing) algorithms are "active learners", as they are "willing" to adopt strategies that may be suboptimal so as to learn from experience. A learning algorithm "*learns to play optimally from experience*", which gives such algorithms an advantage over adaptive algorithms in more complex environments. This also allows them to reach a collusive equilibrium without being designed to do so. Through the simulation of a repeated game played by two "Q-learning" algorithms, representing two competing firms playing a prisoner's dilemma game with strategies

"Price High" and "Price Low" and with a one-period memory[26], the authors show that even if it takes some time for Q-learning algorithms to "realize" that collusion can be profitable, collusion will occur most of the time, even if some experimentation periods will occur when the algorithms engage in a "price war".

Both Klein and Salcedo employ in their work "Q-learning algorithms". These algorithms are examples of model-free active reinforcement learning agents[27]. They learn the value of taking a certain action *a* in a state *s*, where this value, called *Q-value*, is directly related to a payoff $U(\cdot)$, which is a function of state *s*[28]. However, in both papers the very large number of time periods required for "Q-learning algorithms" to explore their environment and learn to adequately balance their dual functions of "exploitation" (reaping benefits) and "exploration" (learning), is typically far greater than the frequency with which firms interact in most markets and carry out effective price changes. It is possible that more sophisticated algorithms can learn more and learn faster[29]. Calvano et al. (2018) discuss these possibilities as well, including communication between algorithms.

III. PREVENTING ALGORITHMIC COLLUSION

Several authors who have addressed the possibilities for achieving tacit collusion equilibrium outcomes by algorithms interacting autonomously from any instructions by human agents, have also opened the possibility for some form of *ex-ante* assessment and regulation over the type of algorithms being used by firms. As referred by Mehra (2016), «*Looking further into the future, regulators may need to develop the ability to test and probe the effects of algorithmic sales on consumers; agencies may need to conduct their own 'algorithmic enforcement'*»[30].

26 The common time discount factor equals 0.995, the learning rate equals 0.15, and the experimentation rate is constant and equals 0.04.

27 It is worth mentioning that reinforcement learning models have been developed in game theory for many years. They attempt to model the behavior of less than fully rational economic agents who interact strategically, and where equilibria, when they exist, arise as long-run outcomes of this interaction. Players learn to improve their strategic choices as they play the game period after period – see FUDENBERG & LEVINE (1998).

28 See Russell & Norvig (2016: chs. 17 and 21) for a more extensive discussion of "Q-learning algorithms".

29 It is worth mentioning that in infinitely repeated (non-cooperative) games, the computation of best-response strategies may not be trivial, and can be quite complex – see e.g., Gilboa (1988), Ben-Porath (1990), and Papadimitriou (1992).

30 See Mehra (2016), p. 1331.

And, as already mentioned, to regard the use of algorithms, or some types of algorithms, as "plus factors" to "an agreement" between firms employing such algorithms[31], possibly in an *ex-post* evaluation.

Calvano et al. (2018) distinguish three possible policy approaches to the risk of algorithmic collusion. A total ban on the use of algorithms is set rightfully aside is an unreasonable approach. The first approach takes "business-as-usual", where algorithmic pricing is regarded as not posing any new problem that cannot be dealt with by current antitrust legislation. In particular, the legal distinction between tacit and explicit collusion is maintained, as attempting to sanction tacit collusion would remain subject to unreasonably high type I and II errors. The second approach calls for an *ex-ante* regulation, or supervision, of PAs, to be carried out by a regulatory (or competition) agency. This agency would have the power to prohibit certain PAs that exhibited a "tendency to collude", a characteristic that would have to be defined in a precise and rational way, not least for the sake of legal certainty. As we will see, this second approach is also favored by Harrington (2019). The third approach calls for an *ex-post* regulation, or control, the same way competition agencies currently deal with antitrust practices, but under legal standards somewhat different from the current ones[32]. Perhaps these standards would take a more assertive, yet careful stance towards "tacit collusion". Calvano et al. (2018) seem to favor this third approach, where the legal distinction between tacit and explicit collusion would have to be reassessed.

Harrington (2019) draws a distinction between the current legal doctrine on collusion by human agents and the situation where prices are set by autonomous artificial agents (AAs)[33]. In this latter case, the strategy determining the price to be charged is written down in the algorithm's code which means that it can, in principle, be accessed, contrary to the mind of a colluding manager. Based on this crucial distinction, this author proposes that liability be defined by a *per se* prohibition of certain PAs that support supra-competitive

31 See e.g., Harrington (2019); Calvano et al. (2018); Gal (2017, 2019); Mehra (2016); Ezrachi & Stucke (2016); Klein (2019).

32 See Calvano et al. (2018: 14/15).

33 In Harrington (2019), an AA is composed of two elements: a "*pricing algorithm*" that prescribes what price to charge depending on the history of the (repeated) game played by the various firms competing in the same market; and a "*learning algorithm*" that chooses and modifies the pricing algorithm based on a pricing algorithm's performance relative to the performance of other pricing algorithms. When the co-domain, or at least the range, of a strategy in a game has more than two elements, then a FA implementing it is a *Moore machine*, a generalization of the basic FA – see annex 2 for a definition of a *Moore machine*.

prices, so as to make collusion by AAs unlawful. Liability would be determined by an examination of a pricing algorithm's (PA) code to determine whether it is a prohibited PA, or by entering data into the PA and monitoring the output in terms of prices to determine whether the algorithm exhibits a prohibited property[34]. As stated, ideally the liability rule would prohibit all algorithms that promote collusion, and would exclude from such prohibition all algorithms that promote efficiency[35]. I.e., an ideal liability rule would allow the decision maker not to commit errors of type I and type II. A realistic alternative would be to design or choose a liability rule that would allow for the maximization of *Likelihood Ratio* $LR(PPA) \stackrel{\text{def}}{=} (1 - Prob[error\ type\ II]) \div Prob[error\ type\ I]$[36]. Harrington (2019) proceeds by drawing a broad outline of a three-step research program to identify which PAs will be prohibited, as follows:

> Step 1: (1.i) Create a simulated market setting with learning algorithms that produce collusion and competition as outcomes; (1.ii) Keep track of when competitive prices emerge and when supra-competitive prices emerge; (1.iii) Perform this exercise with different learning algorithms and for a variety of market conditions.
> Step 2: (2.i) Inspect or test the resulting pricing algorithms for the purpose of identifying those properties that are present when supra-competitive prices emerge but are not present when competitive prices emerge, (2.ii) Pricing algorithms with those properties will have a high likelihood ratio and thus be a candidate for the set of prohibited pricing algorithms.
> Step 3: Test the effect of prohibiting a set of pricing algorithms. This would be done by re-running the learning algorithms in the simulated market setting but where the learning algorithms are constrained not to

34 See "white-box settings" and "black-box settings" in Desai & Kroll (2018).

35 Following Harrington (2019), let *pa* denote a "pricing algorithm" and *PPA* denote the set of prohibited pricing algorithms. Given a specification of *PPA*, Prob [$pa \in PPA|pa$ is collusive] is the probability that a pricing algorithm is determined to be in the prohibited set when the pricing algorithm is collusive. Prob [$pa \in PPA\ |pa$ is competitive] is the probability that a pricing algorithm is determined to be in the prohibited set when the pricing algorithm is competitive. Ideally, Prob [$pa \in PPA|pa$ is collusive] = 1 and Prob [$pa \in PPA\ |pa$ is competitive] = 0 so that a pricing algorithm is concluded to be unlawful if and only if it is collusive. That is, ideally, errors type I and type II would be zero. That such an ideal is not reached will be due to misspecification of set *PPA* – some collusive pricing algorithms are excluded from *PPA* or some competitive pricing algorithms are included – or incomplete data or inadequate methods for evaluating whether a particular pricing algorithm is in *PPA*.

36 Where $(1 - Prob[error\ type\ II]) = 1 - Prob[pa \notin PPA|pa$ is collusive], and $Prob[error\ type\ I] = Prob[pa \in PPA\ |pa$ is competitive], and where denotes the collection of prohibited pricing algorithms.

> select pricing algorithms in the prohibited set. The aim is to test whether supra-competitive prices are less frequently set and competitive prices are not distorted. If so, then the prohibition of some pricing algorithms would make lower prices more frequent, with a corresponding increase in social welfare.

Harrington's three step research program can be applied both *ex-ante* as well as *ex-post*, i.e., as a prevention tool or a sanctioning tool. Nevertheless, its wording suggests an *ex-ante* approach. Clearly, this research program can be carried out for some subset of all possible inputs that can be fed into the different algorithms. But this subset can be smaller than necessary. This can be a serious limitation to the efficacy of such research program.

Other authors have similarly called for some sort of regulation, assessment or auditing of algorithms as a way to prevent or sanction "algorithmic collusion"[37].

We can then pose the following questions: Do these approaches define the way forward? More generally, can competition and/or regulatory agencies rise to the challenge M. Gal encapsulates when she recommends that "*'smart coordination' by suppliers requires 'smart regulation*"?[38] What type of regulation? And how smart can regulation be? The next two sections will explore this challenge, by appealing to recent literature on algorithms and the law and to the theory of computation.

IV. *EX-ANTE* REGULATION, SELF-REGULATION AND THEIR LIMITS

Given the multiplicity of algorithms firms can employ to implement pricing strategies, an *ex-ante* regulatory agency would be truly effective only if, when given any set/vector of algorithms, one or more per firm, it could ascertain whether they exhibited a "tendency to collude", and if yes then prohibit their use. Apart from the existence of limits to such ascertainment, as we will see below, the property "tendency to collude" must be properly defined. For Harrington (2019) it means choosing PA's that through their interaction, eventually result in supra-competitive prices. According to this author, the Finite Automata (FA's) implementing the "tit-for-tat" strategy or the "grim

37 See Calvano et al. (2018: 14-16); Gal (May 2017: 6), through the creation of an "internal algorithmic police"; Mehra (2016: Part IV); Ezrachi & Stucke (2016: 21); Gal (2019: 112). See also Schwalbe (2018: 21-23).

38 See Gal (2019: 97).

trigger" strategy are good PA candidates to fulfill such property[39]. The regulatory agency would need to define its own understanding in a clear and transparent way to minimize legal uncertainty and the probability of committing errors types I and II, through the collection of as much relevant information as possible.

Pricing algorithms themselves can become quite complex. Consider the infinitely repeated prisoner's dilemma game (IRPD) as the paradigm for the strategic interaction between two potentially colluding firms in a market. The "tit-for-tat" strategy can be implemented by a very simple FA with two states and a straightforward transition function. The "grim trigger" strategy is also implementable by a FA with two states and an even simpler transition function. Both these strategies played by both players in the IRPD game can support (price) collusion as a subgame perfect equilibrium, provided certain conditions are satisfied. Similar strategies in an oligopoly game with more than two players can also support (price) collusion as a subgame perfect equilibrium, under certain conditions. But so can infinitely denumerable[40] many other vectors of more complex strategies, implementable by FA, with more states and more complex transition functions.

The regulatory agency could also attempt to identify families of "learning algorithms" (typically, one learning algorithm per firm) such that when they play an infinitely repeated oligopoly game, they will eventually learn to collude. Each of these algorithms receives as input in each period publicly available relevant market data, such as prices charged by the different firms (through PAs) which, together with information on its own firm's costs, profit levels, and possibly other types of data, will choose a PA to be applied for a certain number of time periods. Whether each "learning algorithm" will eventually learn to decode other "learning algorithms" in the repeated game, even if only partially so, might also become possible.

An ever-increasing complexity of algorithms employed by firms would pose a serious challenge to the regulatory agency. Prohibited algorithms could be replaced by new ones that could either escape an *ex-ante* assessment altogether – depending on how easily any such prohibition could be circumvented – or, if not, burden yet again the regulatory agency, which would

39 Note that in Harrington (2019), the prohibition is applied to PAs, not to learning algorithms themselves.

40 When applied to a set, the term "*infinitely denumerable*", which is equivalent to the term "*infinitely countable*", means that the cardinality of that set equals the cardinality of the set $\mathbb{N}$ of natural numbers. In contrast, the set $\mathbb{R}$ of all real numbers is uncountable.

be pressed to decide in a timely fashion, lest it delay the use of efficiency enhancing algorithms.

It seems reasonable then to ask what kind of regulatory agency would have the information and knowledge required to ascertain the properties of ever evolving sets of algorithms submitted for its evaluation, while at the same time controlling for errors type I and II [41].

In face of such a demanding task, could this regulatory agency itself employ a "meta-algorithm" that could do the job, i.e., accept or reject any set of algorithms under submission, once the criteria for prohibition is clearly defined? Not only would such a "meta-algorithm", still being an algorithm, never commit type I and II errors – these could only come from ill-defined prohibition criteria –, but its computational capabilities could surpass any human regulator's computational capabilities, unless one is prepared to boldly assert otherwise, as it could question the validity of the "*Church-Turing Thesis*", discussed below.

If we accept the *Church-Turing Thesis*[42], which states that Turing Machines (TMs) are formal versions of algorithms, and that no computational procedure can be considered an algorithm unless it can be presented as a TM, then, such "meta-algorithm" would be a TM, as are all the algorithms we have been talking about. And it would represent an upper bound to the computational capabilities of any human regulator, endowing the regulator with the means to perform its job. This job could be extended to allow the characterization of a particular algorithm, or set of algorithms, as "plus factor(s)" to "an agreement" between firms employing such algorithms.

Since "algorithmic collusion" is a possible outcome from the interaction of several algorithms, typically one per firm, that the regulator wants to prevent, the meta-algorithm would be simulating their interaction for any given data set that includes prices, costs and other information relevant for the pursuit

41 Maybe competition agencies would consider useful to issue of guidelines on the use of algorithms by firms in the market, along the lines of what happens with the application of Article 101(3) of TFEU, where "block exemptions" were created, or with the notion of "hard core restrictions", such as RPM, as included in the 2010 EC guidelines on vertical restrictions (EC Guidelines on Vertical Restrictions, OJEU C130/01, 19.05.2010).

42 See Lewis & Papadimitriou (1981) for a presentation of this thesis or conjecture. See also "*Church's Thesis*" in Davis & Weyuker (1983). Sometimes, the "*Church-Turing Thesis"* is presented as follows: *The Universal Turing Machine can perform any calculation that any 'human computer' can carry out.* By "human computer" one means a human being using his/her own mind and any other tools to perform any type of computation. Note that this "*Church-Turing Thesis"* is not presented as a theorem, as it is not a mathematical result. It may be disproved in the future. However, according to most scholars that is quite unlikely to happen.

of the firms' ultimate goals. In other words, this meta-algorithm is best interpreted as a Universal Turing Machine (UTM)[43].

Having reached this point we are confronted with the following:

> **Result 1**: *There is no such meta-algorithm which, when presented with a set of algorithms, one per firm, together with any data set, suitably encoded, is able to decide whether they belong to the set of algorithms that should be prohibited*. [A line of proof for this result is given in annex 1]

In other words, the "*ex-ante* algorithmic assessment problem", as characterized above, is unsolvable[44]. I believe that this result sets a limit on how "smart" and "transparent" *ex-ante* regulation of PAs can be, and casts some doubt over the efficacy of such regulation.

In contrast with Harrington (2019), I am redefining the class of algorithms that may be prohibited *per se* as learning algorithms and not PAs. In Harrington's set up "PAs" are chosen by "learning algorithms" as the infinitely repeated oligopoly game under analysis unfolds. In any case, all these different types of algorithms can be interpreted as Turing Machines. Therefore, the above result still would apply.

Note that this result does not say that for any given algorithm or set of algorithms there does not exist a "meta-algorithm" that is able to decide whether they should be prohibited or not. What it says is that there is no "meta-algorithm" that can decide whether or not any algorithm or set of algorithms should be prohibited[45]. Therefore, a certain meta-algorithm may do the job for a particular algorithm or set of algorithms but may be unable to do the job for another particular algorithm or set of algorithms. This lack of robustness may question the viability of an *ex-ante* assessment exercise.

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43 See annex for a definition of a UTM.

44 Desai & Kroll (2018) refer in their paper that the "Halting problem" – see annex 2 for a description of this problem – which is a well-known unsolvable problem in the theory of computation, implies that several other interesting problems are also unsolvable. And that these inherent limits to solvability indicate that "*insofar as law and policy seeks a general transparency tool that analyzes all disclosed algorithms for compliance with desired norms, such a tool will not be possible*". See also Kroll et al. (2017). Note that Rice's Theorem (1953), which I use to prove the above result – see annex 1 – generalizes the theorem that states the insolvability of the "Halting problem" (due to Alan Turing, 1936-7) – see Rogers (1987: 34). I used Rice's Theorem in another context more than twenty years ago – see Gata (1995). Kroll et al. (2017:652) make a reference to this theorem relating it to the Halting problem.

45 Using *First Order Predicate Calculus* (or *First Order Logic*), the result can be stated along the following lines: $\neg\, \exists\, TM$: $\forall$ (...). Which does not mean it is not true that: $\forall$ (...) $\exists\, TM$: (...).

The above impossibility result places serious limits to an *ex-ante* assessment exercise as seemingly proposed by some authors. Some will say that this is the price to pay for eschewing an assessment program that is allowed to commit errors type I and II, and that there is no need to pay such a heavy price. Maybe Harrington's three step research program, together with a definition of liability that maximizes the Likelihood Ratio $LR(PPA)$ points us in the right direction.

As a realistic alternative to never committing errors type I and II, Harrington proposes the maximization of the likelihood ratio $LR(PPA) \stackrel{\text{def}}{=} (1 - Prob[\textit{error type II}]) \div Prob[\textit{error type I}]$, where $LR(PPA)$ measures the efficacy of a particular definition of liability. In order to calculate such ratio, one will need to define a probability measure on the sample space Ω of all pricing algorithms PA. If we do not restrict at the outset the set of allowed pricing algorithms to be FA (more precisely, Moore machines) with at most two-states, then the space Ω is infinite. For example, we can take the strategy "*tit-for-tat*" in the IRPD Game and build another (supergame) strategy, call it φn, where, in the first period of the game the player cooperates, and after a deviation by the other player, this player deviates as well for n consecutive periods, where $n \geq 2$. For each number n, there is a high enough time discount factor $1/(1 + r)$ for both players such that, under perfect information (a sufficient but not a necessary condition), the pair of strategies ("*tit-for-tat*"; φn) constitutes a subgame perfect equilibrium supporting cooperation/collusion in every period of the IRPD game. Clearly, there are infinitely many (supergame) strategies φn, where $n \geq 2$. That the space Ω is infinite but denumerable results from the well-known fact that the set of all algorithms (or TMs), of which Ω is a (strict) subset, is an infinitely denumerable set.

Assume now we can partition the space Ω into two disjoint subsets PPA and $\Omega \setminus PPA$, where PPA denotes the set of all prohibited pricing algorithms. Hence, all pricing algorithms in set $\Omega \setminus PPA$ are not prohibited (by the regulatory agency). Assume as well we can partition the space Ω into the disjoint subsets $\{pa$ is collusive$\}$ and $\{pa$ is competitive$\}$, where "competitive" means "not collusive". Then, one can (theoretically) define the conditional probabilities $Prob[pa \notin PPA | pa$ is collusive$]$ and $Prob[pa \in PPA \,| pa$ is competitive$]$. However, can we decide whether any pricing algorithm pa is in the set PPA? More precisely, is there an algorithm (TM) that decides membership in set PPA? The same query can be asked about the subset $\{pa$ is competitive$\}$.

Result 2: *The answer to both these questions is negative* – see annex 1 for a line of proof. This means none of the conditional probabilities is computable.

Since $(1 - Prob[error\ type\ II]) = 1 - Prob[pa \notin PPA|pa$ is collusive] and $Prob[error\ type\ I] = Prob[pa \in PPA\ |pa$ is competitive] it follows that *likelihood ratio* given by $(1 - Prob[error\ type\ II]) \div Prob[error\ type\ I]$, and is a non-computable function[46]. Hence, its maximization is an unsolvable problem. Of course, we do not expect the different jurisdictions to actually go through this type of maximization problem when attempting to define liability. Most likely, how liability is defined can be better understood as the result of a learning process by the jurisdiction itself over several years of law enforcement. In any case, the above result raises doubts on how far we can go in controlling for the efficacy of any definition of liability in competition law.

On a self-regulatory option, notice that at any point in time each firm may only know the algorithms it employs to carry out its market strategies[47], but not necessarily the algorithms employed by other firms operating in the market. Which means that each firm will not be able to simulate with a high enough degree of accuracy how its own algorithms will behave period after period as they interact with other algorithms. Unless each firm engages in repeated simulation exercises by assuming different sets/vectors of algorithms that may be used by other firms. Which could be quite costly and not very informative. Under such limited information scenario, self-regulation may not be an effective enough option to meet the standards imposed by a competition or regulatory agency.

46 Given a probability space $(\Omega, \mathcal{F}, P)$ and a sub-sigma-algebra $\mathcal{B}$ of $\mathcal{F}$, the conditional probability $P(A|\mathcal{B})$ of a measurable subset $A \in \mathcal{F}$ is defined as the conditional expectation $E(A|\mathcal{B})$ of indicator function iA of subset A given $\mathcal{B}$. I.e., $P(A|\mathcal{B}) \stackrel{\text{def}}{=} E(A|\mathcal{B}), \forall A \in \mathcal{F}$. The conditional probability $P(\cdot\,|\mathcal{B})$ is a mapping $\Omega \times \mathcal{F} \to [0,1] \subset \mathbb{R}$. A conditional probability $P(\cdot\,|\mathcal{B})$ is called *regular* if $(\forall \omega \in \Omega)$: $P(\cdot\,|\mathcal{B})(\omega)$ is also a probability measure. Assuming $Prob[error\ type\ I] \neq 0$, the above defined *likelihood ratio* is a function mapping $\Omega \times \mathcal{F}$ into $\to [0, +\infty)$, given the probability space $(\Omega, \mathcal{F}, P)$, where Ω is the set (space) of all pricing algorithms, $\mathcal{F}$ is a σ-algebra in Ω, and P is a probability measure.

47 Assume that to know an algorithm might mean to know some, but not necessarily all, of its relevant characteristics.

V. *EX-POST* AUDITING AND SANCTIONING AND ITS LIMITS

In an *ex-post* situation, i.e., when a specific *ex-post* investigation is opened[48], we assume a given set of algorithms employed by the different firms will be analyzed by the regulatory/competition agency. It is likely this investigation will involve simulating the behavior of those algorithms as they are given as input data on relevant variables such as prices. Such data, at least in part, are produced period after period by the algorithms themselves, as their output while they run in an interactive way. The aim will be to compare the output from such simulations to the output observed in the market and decide whether it can be established with a high enough degree of certainty there was algorithmic price collusion[49].

Desai & Kroll (2018), Kroll et al. (2017), and other authors, discuss different approaches for testing and evaluating algorithms[50]. For example, "*White-box testing*" is a method for analyzing software that tests internal structures or workings of an application. It is a method to test an application at the level of the "source code"[51]. "*Black-box testing*" is a method for software testing that examines the functionality of an application without peering into its internal structures or workings. Both types of testing can follow methods: (1) static methods, which look at the code without running the program;

48 In the EU, Article 101 (TFEU) cases can originate in: (1) a complaint, (2) opening of an own–initiative investigation, (3) information reported by individuals via the "whistleblower" tool, or (4) a leniency application from one of the participants to a cartel. – see http://ec.europa.eu/competition/antitrust/procedures_101_en.html. Recall that Article 101 (TFEU) prohibits 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. Regulation 1/2003 introduced a system of decentralized *ex post* enforcement, in which the European Commission and the national competition authorities of the EU Member States forming together the European Competition Network (ECN), pursue infringements of Articles 101 and 102 TFEU. Article 102 prohibits the abuse of a dominant position within the internal market in so far as it may affect trade between Member States.

49 In a more recent paper, Calvano et al. (2019) create an environment to analyze the interaction among a number of "Q-learning algorithms" in the context of an oligopoly model of price competition with Logit demand and constant marginal costs. They show that "*algorithms consistently learn to charge supra-competitive prices, without communicating with each other. The high prices are sustained by classical collusive strategies with a finite punishment phase followed by a gradual return to cooperation. This finding is robust to asymmetries in cost or demand and to changes in the number of players*".

50 Kroll and Desai & Kroll do mention computational unsolvability in the legal context of algorithmic transparency. My goal is to explore the limits that are imposed by computational unsolvability on *ex-ante* and ex-post antitrust policy in the specific context of algorithmic collusion.

51 According to the *Linux Information Project*, "source code" is defined as the version of software as it is originally written (i.e., typed into a computer) by a human in plain text (i.e., human readable alphanumeric characters) – see http://www.linfo.org/

and (2) dynamic methods, which run the program and assess the outputs for particular inputs or the state of the program as it is running[52]. Nevertheless, and as pointed out by Desai & Kroll, these testing methods cannot escape the unsolvability of the "Halting Problem".

Apart from "*White-box testing*" and "*Black-box testing*", Desai & Kroll (2018) analyze a third way to test software and algorithms, namely "*Ex-post Analysis and Oversight*". This approach may have several appealing features but as recognized by the authors, "*software that uses certain types of machine learning or is modified frequently by or is modified frequently by its operators to respond and adapt to dynamic inputs and user behavior, are not addressed well by the solutions presented* ["white-box testing", "black-box testing", "*ex-post* analysis and oversight"]. *Many systems change often, either because of regular changes by designers or because they use automated processes such as online machine learning models which 'can update their predictions after each decision, incorporating each new observation as part of their training data.' The approach of creating an audit log showing that everyone is subject to the same decision policy is less useful when systems are dynamic and change over time because the system may (desirably) change between decisions*". The type of algorithms that are raising concerns in the enforcement of antitrust law are exactly learning algorithms that can update their predictions after each decision, incorporating each new observation as part of their training data.

To competition law and economics scholars and practitioners, it still seems unclear how efficient can *ex-post* auditing and sanctioning become when dealing with algorithms as facilitators of collusive behavior in repeated games, and with increasingly sophisticated algorithms that can interact as autonomous implementers of pricing strategies, learning to collude without any explicit instructions provided by human agents.

VI. CONCLUSIONS

To what extent can competition policy keep a distinction between tacit and explicit collusion? To the difficulties pointed out by Kaplow (2011), namely on

52 As referred by Kroll et al. (2017: 646/7), "*Computer scientists evaluate [computer] programs using two testing methodologies: (1) static methods, which look at the code without running the program; and (2) dynamic methods, which run the program and assess the outputs for particular inputs or the state of the program as it is running. Dynamic methods can be divided into (a) observational methods in which an analyst can see how the program runs in the field with its natural inputs; and (b) testing methods, which are more powerful, where an analyst chooses inputs and submits them to the program*".

a consensual and precise definition of the concept "agreement", the increasing use of "smart algorithms" may introduce additional challenges as these type of algorithms can facilitate tacit collusion and lead to an increased blurring of borders between tacit and explicit collusion – see also Harrington (2019).

As shown by some authors in very recent work – see Calvano et al. (2019) – the interaction among Q-learning algorithms in the context of an oligopoly model of price competition, these algorithms consistently learn to charge supra-competitive prices, without communicating with each other. The high prices are sustained by collusive strategies with a finite punishment phase followed by a gradual return to cooperation. Hence, we might not be any more in the realm of science fiction.

How reliable and effective can be an *ex-ante* supervision and control exercised over algorithms? How reliable and effective cab be an *ex-post* auditing and sanctioning of collusive algorithms? I show that computational unsolvability casts some doubts over how efficient both these approaches can become[53].

Nevertheless, software testing is carried out routinely – as shown by Desai & Kroll (2018) and by Kroll et al. (2017) –, and we may simply acknowledge that the way liability is defined and the way ensuing regulation and sanctioning are exercised rely on a "learning-by-doing" approach and accept that errors type I and II will be committed, as a price to pay for getting away from non-decidability or computational unsolvability. However, it seems we have little clue about the magnitude of such errors. Which in turn may affect how productive the "learning-by-doing" approach may be. Moreover, the ongoing research on various challenges current software systems pose will likely have an impact on how to deal with the legal challenges referred above. *In particular an analysis of such software testing methodologies may help define the scope and limits of legal enforcement.*

Competition law enforcement and policy have much to gain from an interdisciplinary collaboration with computer science and mathematics. Some familiarity with computability, computational complexity and, I would venture to say, with the theory of languages and grammars, may help scholars working in competition law and economics to better face the legal challenges posed by artificial intelligence. A refinement of some legal concepts could very well be a positive externality from such collaboration.

53 Notice that the use of "quantum TM" does not make solvable a problem that is unsolvable using a non-quantum TM – see Deutsch (1985).

ANNEX 1:

Line of Proof (for Result 1): If we accept the *Church-Turing Thesis* [which states that Turing Machines (TMs) are formal versions of algorithms, and that no computational procedure can be considered an algorithm unless it can be presented as a TM – see Lewis & Papadimitriou (1981: ch.5)], a "learning algorithm" (LA) can be regarded as a TM. In each period a LA will receive as input some data on prices, costs, and other relevant parameters. Given this input (notice that these data can be coded, by use of *Gödel numbers*, into a single integer), the LA outputs a "pricing algorithm" (that can be played by a FA or a TM). This pricing algorithm can also be coded into a single integer. Hence, the LA computes a function mapping integer numbers into integer numbers. The domain and codomain of such mapping are subsets of the set $\mathbb{N}$ of natural numbers. This mapping is a partial recursive 1-ary function. Meaning that when an input is undefined (e.g., there are natural numbers which do not code any meaningful data) so is its output; and that this mapping is computable, i.e., recursive (which is by assumption). If we want some LA to be prohibited *per s*e, it means that for certain inputs, they will compute, or output, unacceptable "pricing algorithms". We can then say that each of these LA's computes a partial recursive 1-ary function belonging to a certain "forbidden" or "prohibited" set $\mathbb{C}$. Let $\mathcal{g}\mathbb{C}$ denote the set of all codes where each code uniquely identifies a partial recursive 1-ary function in set $\mathbb{C}$. Set $\mathcal{g}\mathbb{C}$ is clearly non-empty (as there are acceptable pricing algorithms). And set $\mathcal{g}\mathbb{C}$ is also different from the set $\mathbb{N}$ of natural numbers (as there are unacceptable pricing algorithms, such as the ones implementing a grim-trigger strategy). I.e., $\emptyset \neq \mathcal{g}\mathbb{C} \neq \mathbb{N}$. Then, by H. G. Rice's Theorem (1953) – see below –, set $\mathcal{g}\mathbb{C}$ is not recursive, i.e., there is no "algorithm" that decides membership in this set. Therefore, there is no "algorithmic judge" that, when presented with a LA, will be always able to decide whether this LA should be prohibited or not.

It is easy to extend the previous result and proof to the case when a vector of TM's are to be subject to analysis and judgement by an "algorithmic regulator/supervisor". A vector of n TM's can given as an input to n Universal Turing Machine (UTM) through their *Gödel numbers*. Or just encode each of the nTM's into a *Gödel number* $\mathcal{g}i$ and then encode the resulting vector of n *Gödel numbers* as follows: $[\mathcal{g}_1, \mathcal{g}_2, \ldots, \mathcal{g}_n] = \prod_{i=1}^{n} p_i^{\mathcal{g}i}$, where pi are prime numbers. Give also as input to the UTM the data that is to be given to the n TM's. And let the UTM simulate the calculations carried out by the n TM's. *QED*

Line of Proof (for Result 2): It follows from Result 1, by use of Rice's Theorem**.** As there is no algorithm that decides membership in set PPA, there is no algorithm that decides membership in its complement, i.e., in the set of all PA's such that {PA is competitive}. QED

Theorem by H. G. Rice (1953): *Let $\mathcal{D}$ be a set of partial recursive one-ary functions. And let $\mathcal{G}_{\mathcal{D}}$ be denote the set* $\{n \in \mathbb{N}: \varphi_n^1 \in \mathcal{D}\}$. If $\emptyset \neq \mathcal{G}_{\mathcal{D}} \neq \mathbb{N}$. *then the set $\mathcal{G}_{\mathcal{D}}$ is not recursive* – see Rogers (1987), or Davis & Weyuker (1983) for a statement and proof of Rice's Theorem.

Rice's Theorem basically states that in computational theory, all non-trivial (i.e., neither true nor false for every computable function) semantic (i.e., behavior) properties of algorithms/computer programs are undecidable. For example, whether a computer program will eventually halt on any input string is a semantic property.

ANNEX 2:

A **Finite Automaton** (FA) is a simple computational model with a fixed memory. It can be defined as a 5-tuple $(S, \Sigma, \delta, s_0, F)$ where S is the set of states of the machine, Σ is the input alphabet, $\delta: S \times \Sigma \rightarrow S$ is the transition function, s_0 is the initial state, and F is the set of final (or accepting) states, where $F \subseteq S$.

A useful way of looking at a FA is to regard it as a simple "language recognition device". When we feed any string x of symbols (over an alphabet) to an FA, the device (FA) can either end up in an "accepting state" or not. If it does, we say this string has been accepted, or recognized, by the device (FA). The set of all strings accepted by an FA represents the "language" accepted by this FA. Another way to look at an FA is to regard it as a simple computing device with a fixed (finite) capacity central processing unit (CPU), with no auxiliary memory, and where its output is binary (0 or 1, Yes or No).

There are several variations and extensions of the notion of FA, such as an FA *with output*. For example, a **Moore machine** is defined as a 6-tuple $(S, \Sigma, \Delta, \delta, \lambda, s_0)$, where $S, \Sigma, \delta,$ and s_0 are defined as before, and where Δ is the output alphabet and $\lambda: S \rightarrow \Delta$ is the output function. An FA can then be seen as a Moore machine where the output alphabet $\Delta = \{0,1\}$, and where state s is "accepting" if and only if $\lambda\,(s) = 1$.

A **Turing Machine** (TM) is a very general model of a computer (a CPU, plus an auxiliary memory and an input/output device). It is a computing device with an unbounded and unrestricted access memory. This feature sets the computational capability of a TM quite above the computational capability of a FA. Informally, a TM consists of:

(1) A collection of distinct symbols called an alphabet A, and which includes a symbol called the "blank symbol";
(2) A tape, i.e., a "roll of paper" on which calculations are performed, which is divided into cells (or squares) and is infinite in both directions. At any given time during a "computation", all but a finite number of cells are "blank", i.e., contain the blank symbol;
(3) A finite set of states. A state can be thought of as describing the internal configuration of the TM at any particular instant;
(4) A read-write head which at any given time is scanning (i.e., reading) the contents of one cell of the tape, and is capable of replacing the symbol scanned by another symbol;

(5) A finite ordered list of instructions. Each instruction either:
  (5.1) tells the computer to halt (i.e., stop) or,
  (5.2) tells the computer what next state to enter and tells the read-write head to do one of the following:
    (5.2.1) move one cell to the left;
    (5.2.2) move one cell to the right;
    (5.2.3) replace the symbol scanned by another symbol.

Each TM can be thought of as a finite list of instructions. Each instruction describes the present status of the machine (i.e., the present state and the symbol being read by the tape head) and what the next step in the computation will be. To each TM we can assign a number (a positive integer) which uniquely identifies it. That is, to each TM we can associate a "code" number. But not every positive integer is the code for some TM.

Formally, a **Turing Machine** is defined as a quadruple (K, Σ, s_0, δ) where K is a finite set of states (of the machine) not containing the "halt state" h; Σ is an alphabet, containing the blank symbol, but not containing the symbols L and R (for "Left" and "Right"); s_0 is the initial state; and δ: $K \times \Sigma \rightarrow (K \cup \{h\}) \times (\Sigma \cup \{L, R\})$ is the transition function.

A **Universal Turing Machine** (*UTM*) is a TM that takes as arguments both the encoding $\rho(\mathcal{M})$ of any Turing Machine $\mathcal{M}$, and any input string w, and performs whatever operations on w would have been performed by $\mathcal{M}$ – see e.g., Lewis & Papadimitriou (1981: sec 5.7). The encoding of any TM can follow the Gödel numbering system, itself based on the Fundamental Theorem of Arithmetic, also called the Unique Factorization Theorem (due to C. F. Gauss, 1801), which states that: *Any positive integer can be uniquely factored into a product of powers of prime numbers*.

A *UTM* can also take as arguments the encodings of n Turing Machines, plus any input strings, one per TM, and simulate the interaction of these n TMs when initiated with these input strings.

The Halting Problem (when applied to TMs): Given an arbitrary Turing Machine $\mathcal{M}$ and an arbitrary input w, can it be determined whether this TM will eventually halt on input w? It can be shown that: *Given an arbitrary Turing Machine $\mathcal{M}$ and an arbitrary input w, there is no algorithm for determining whether $\mathcal{M}$ will eventually halt on input w*. Hence the **Unsolvability of the Halting Problem.**

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BREVES

ANÁLISE ALTERNATIVA DE FUSÕES: INDICADORES DE PREÇOS X DEFINIÇÃO DE MERCADO RELEVANTE

*Simone Maciel Cuiabano**

1. INTRODUÇÃO

A análise de fusões e aquisições representa uma grande parte do trabalho do Conselho Administrativo de Defesa Econômica (Cade), autarquia responsável pela preservação da concorrência no Brasil. Em 2016, entre todos os casos julgados pelo Conselho, 55% corresponderam à apreciação de atos de concentração. Daí a importância da utilização de métodos eficazes para a análise de fusões. A Lei 12.529/11 inovou no sistema de concorrência brasileiro ao exigir que os atos de concentração sejam previamente notificados antes de consumados, ao contrário do que ocorria no passado. O Cade possui 240 dias para aprovar ou não as propostas de aquisição de empresas e essa análise pode ser resolvida em até 30 dias se elas forem enquadradas com menor potencial ofensivo à concorrência. Entre as possíveis condições para esse enquadramento, a mais comum é a baixa participação de mercado (menor que 20%, nos casos das fusões horizontais).

A hipótese de que a combinação entre empresas com baixa participação de mercado é menos lesiva à concorrência parte do paradigma estrutura-conduta-performance, cujo pressuposto é que indústrias muito concentradas têm menor incentivo à inovação e maior probabilidade de aumento de preços. Todavia, em uma indústria na qual há produtos diferenciados, isto é, com características específicas que tornem um produto preferível a um similar, essa hipótese não é necessariamente verdadeira. Mesmo que uma empresa

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detenha grande poder de mercado, é possível que sua participação em um nicho específico seja menor, não significando que a fusão irá resultar em aumentos de preços (e vice-versa).

Diante desse desafio, Farrel e Shapiro (2010)[1] e Salop e Moresi (2009)[2] desenvolveram indicadores informativos que vêm sendo adotado por autoridades da concorrência da União Europeia e dos Estados Unidos, cuja missão é a de prever possíveis aumentos de preços em uma fusão sem a utilização de modelos econométricos. Os pesquisadores ressaltam que a análise de um ato de concentração precisa considerar dois efeitos opostos: a perda de competição direta entre duas empresas, que cria uma pressão positiva sobre os preços; e as reduções de custo marginal, que geram eficiências. Em alguns casos, a hipótese de que a fusão irá criar uma concentração requer uma definição de qual é o mercado em questão. A tarefa de encontrar esse mercado específico, não sendo trivial, acaba por tomar muito tempo dos técnicos de concorrência, o que pode ser minimizado com o uso dos indicadores de pressão de preços.

O objetivo deste artigo é apresentar esses indicadores de forma resumida, de modo a facilitar a vida dos interessados em política da concorrência e promover um debate mais qualificado e mostrar sua aplicação em um caso no Brasil.

2. PRIMEIROS CONCEITOS: ELASTICIDADE-CRUZADA E TAXA DE DESVIO

Suponha que haja quatro redes de supermercados em uma cidade, cada um com participação de 25%. A compra de uma rede pela outra automaticamente gera uma concentração de 50%, índice moderadamente preocupante sob a ótica da análise clássica da concorrência. Todavia, supomos que esses mercados estão espacialmente distribuídos na cidade, sendo que os supermercados A e B estão a menos de 1 quilômetro de distância; já entre os mercados B e C ou B e D (ou A e C e A e D) há uma distância maior a ser considerada pelo consumidor, cerca de 5 quilômetros.

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1 Farrell, J. & Shapiro, C., "*Antitrust Evaluation of Horizontal Mergers: An Economic Alternative to Market Definition*." Fevereiro de 2010. Disponível em:<https://ssrn.com/abstract=1313782>.

2 Salop, S. & Moresi, S., "Updating the Merger Guidelines: Comments", in G*eorgetown Law Faculty Publications and Other Works*, nr. 1662 (2009), Disponível em: <http://scholarship.law.georgetown.edu/facpub/1662>.

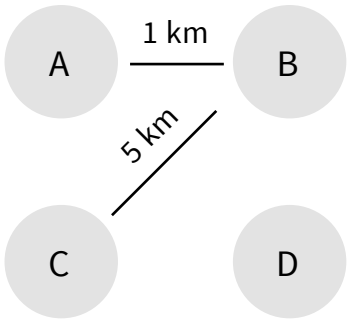

Figura 1. Exemplo de distâncias entre supermercados.

Fica claro que, mesmo possuindo uma participação de 25% cada, a fusão entre os supermercados A e B tem maior probabilidade de gerar prejuízos à concorrência que uma fusão entre os mercados B e C. Isso porque é necessário considerar a preferência do consumidor pelas quatro lojas. No caso acima, a chance de o cliente migrar para o mercado B no caso de um aumento de preços no supermercado A é maior que para o mercado C. Mas não se pode descartar a hipótese de que o mercado C esteja no caminho de um consumidor cativo de A, que pode aproveitar para comparar os preços entre as duas lojas. O efeito sobre a demanda na loja B quando a loja A aumenta seu preço, a elasticidade-cruzada, é positivo se elas são substitutas.

Assim, um estabelecimento que planeje um aumento de preços considera a clientela que irá perder para a loja concorrente, de modo que seu o incentivo é conhecido como taxa de desvio. Em fórmula matemática, a taxa de desvio (do inglês, *diversion ratio* ou DR) é a razão entre a elasticidade cruzada do produto B em relação aos preços de A e a elasticidade-preço do produto A:

$$DR = \frac{\frac{\varepsilon_{qB}}{pA}}{\frac{\varepsilon_{qA}}{pA}}$$

3. O ÍNDICE POSITIVO DE PRESSÃO DE PREÇOS (UPP)

Suponhamos que os supermercados A e B são objetos de fusão. A vende apenas o produto 1 e B vende apenas o produto 2, sendo 1 e 2 muito semelhantes, diferenciados pelo custo de deslocamento. Cada loja uma possui uma

função lucro (π) que depende das quantidades (q) e dos preços (p), deduzidas dos custos (c):

$$\pi_A = p1q1 - c1q1$$
$$\pi_B = p2q2 - c2q2$$

A corporação que coordenará as duas empresas após a fusão pode controlar a quantidade vendida de A ou B para maximizar o lucro final colocando uma "taxa" interna. Essa taxa é o custo de oportunidade de vender mais de um produto em detrimento do outro:

$$\frac{d\pi_A}{dq1} = p1 - c1$$

Para maximizar o lucro da firma B, sendo que agora elas fazem parte da mesma corporação, ela será "taxada" ao equivalente à maximização de lucro da firma A:

$$T1 = \frac{d\pi_B}{dq1} = \frac{d\pi_B}{dq2}\left(\frac{dq2}{dq1}\right)$$
$$\Rightarrow \quad T1 = (p2\text{-}c2)DR_{12}$$
$$\Rightarrow$$

O termo $\left(\frac{dq2}{dq1}\right)$ é a taxa de desvio da loja A para B, isto é, o quanto do produto 2 deixa de ser produzido quando existe a opção de aumentar a produção de 1. O termo (p2-c2) é a margem de lucro da firma 2.

Essas "taxas" resultam da canibalização de uma empresa pela outra, com vistas a reduzir o custo de produção da firma fusionada e manter os lucros elevados. Dessa forma, uma fusão pode gerar pressão sobre os preços se o termo de canibalização T1 for maior que as reduções de custo (ou ganhos de eficiência):

$$D_{12}(P_2 - C_2) > E_1C_1$$

As fusões podem reduzir o custo da corporação final reduzindo essa "taxa interna", isto é, com a criação de eficiências (equivalente ao termo E_1C_1). Essa expressão é a força contrária que pressiona os preços para baixo. Dessa forma, o índice de pressão de preços é equivalente à:

$$UPP = D_{12}(P_2 - C_2) - E_1C_1$$

4. GUPPI

Diante das dificuldades em se definir ou calcular as eficiências oriundas de uma fusão, Salop e Moresi (2009) sugerem um índice bruto de pressão positiva sobre os preços (GUPPI). O GUPPI tem como objetivo avaliar a pressão sobre os preços considerando apenas a proximidade de substituição entre os produtos das empresas fusionadas. Formalmente:

$$GUPPI_1 = D_{12}m_2\frac{P_2}{P_1}$$

Na qual m_2 representa a margem preço-custo do produto da firma 2 em percentual.

5. UPP EM MERCADOS DE DOIS LADOS

Os índices desenvolvidos partem da premissa de um mercado de um único lado, isto é, no qual a empresa trabalha com apenas um único público consumidor de seu produto ou serviço. Mercados de dois lados, na definição de Rochet e Tirole (2003)[3], são mercados caracterizados pela presença de dois lados distintos que se beneficiam de sua interação mútua, que ocorrem por meio de uma plataforma comum. Os produtos são oferecidos para mais de um público consumidor e seus lucros dependem dos preços mutualmente cobrados. Um exemplo bem conhecido é a venda de de jornais, no qual os consumidores pagam pelo exemplar com o fornecimento de notícias, e os publicitários pagam pelo espaço nesses meios de comunicação para alcançar o público desejado. A utilidade do leitor é inversamente proporcional à quantidade de propaganda nesses espaços, o que faz com que os jornais ofereçam um espaço limitado em suas publicações. Por outro lado, o preço muito alto dos jornais diminui ou limita o público atingido pelo espaço publicitário, que estão em busca de "olhos" para alcançar a clientela almejada.

3 Rochet, Jean-Charles & Tirole, Jean. "Platform competition in two-sided markets" in *Journal of the European Economic Association* 1.4 (2003): 990-1029.

Affeldt et al (2013)[4] questionaram a aplicação do UPP e GUPPI em fusões que envolvam mercados de dois lados. Nesses, as quantidades em um lado são funções de preços nesse mesmo lado do mercado e das quantidades no outro lado do mercado. No contexto do mercado publicitário, isso equivale dizer que a quantidade de propaganda demandada depende do preço do espaço publicitário e da quantidade de leitores. Supondo uma fusão entre dois jornais 1 e 2 comercializados no mesmo mercado geográfico, o lucro da empresa 1 antes poderia ser representado pela equação:

$$\pi_1 = (p_1^p - c_1^p)q_1^p + (p_1^l - c_1^l)q_1^l$$

Na qual p_1^p é o preço cobrado pelo espaço publicitário *p*, q_1^p é a quantidade vendida de espaço publicitário *p* e c_1^p o custo de se oferecer esse espaço pelo jornal 1, somado ao faturamento obtido com a quantidade q_1^l de jornais vendidos ao leitores *l* e o preço p_1^l a eles cobrados, retirados os custos c_1^l com a produção e comercialização dos jornais. De forma semelhante, o lucro do jornal 2 equivale à:

$$\pi_2 = (p_2^p - c_2^p)q_2^p + (p_2^l - c_2^l)q_2^l$$

Após a fusão, os preços são estabelecidos de forma a maximizar os lucros conjuntos de ambos jornais, incorporando os ganhos de eficiência em relação à publicidade E_1^p e em relação às vendas E_1^l do jornal 1:

$$\pi_1 + \pi_2 = (p_1^p - (1 - E_1^p)c_1^p)q_1^p + (p_1^l - (1 - E_1^l)c_1^l)q_1^l + (p_2^p - c_2^p)q_2^p + (p_2^l - c_2^l)q_2^l$$

A solução dessa equação em relação aos preços p_1^p e p_1^l torna possível a derivação de índices UPP aplicados tanto ao mercado de publicidade quanto de venda de jornais, de forma que:

$$UPP_1^p = D_{12}^{pp}\left(P_2^p - C_2^p\right) + D_{12}^{pl}\left(P_2^l - C_2^l\right) - E_1^p C_1^p + D_{11}^{pl} E_1^l C_1^l$$

$$UPP_1^l = D_{12}^{lp}\left(P_2^p - C_2^p\right) + D_{12}^{ll}\left(P_2^l - C_2^l\right) - E_1^l C_1^l + D_{11}^{lp} E_1^p C_1^p$$

4 Affeldt, Pauline; Filistrucchi, Lapo & Klein, Tobias J. "Upward Pricing Pressure in Two-sided Markets.", in *The Economic Journal*, 123.572 (2013): F505-F523.

Verifica-se que o desvio que pode existir da empresa 1 para a 2 no caso de um aumento de preços de espaço publicitário não se dá apenas nesse setor, mas também causa um desvio na própria venda de jornal (com o sobrescrito *l* , número de leitores). No caso, a fusão entre dois meios de comunicação gera uma dupla canibalização, captada tanto pelas taxas de desvio que haveriam entre as firmas 1 e 2 quanto pelas taxas de desvio entre espaço publicitário *p* e leitores *l*. Nesse caso, há 6 novas taxas de desvio que precisam ser avaliadas:

$$DR_{12}^{pp} = \frac{\frac{\partial Q_2^p}{\partial P_1^p}}{\frac{-\partial Q_1^p}{\partial P_1^p}} \quad DR_{12}^{pl} = \frac{\frac{\partial Q_2^l}{\partial P_1^p}}{\frac{-\partial Q_1^p}{\partial P_1^p}}$$

$$DR_{12}^{lp} = \frac{\frac{\partial Q_2^p}{\partial P_1^l}}{\frac{-\partial Q_1^l}{\partial P_1^l}} \quad DR_{12}^{ll} = \frac{\frac{\partial Q_2^l}{\partial P_1^l}}{\frac{-\partial Q_1^l}{\partial P_1^l}}$$

$$DR_{11}^{pl} = \frac{\frac{\partial Q_1^l}{\partial P_1^p}}{\frac{-\partial Q_1^p}{\partial P_1^p}} \quad DR_{11}^{lp} = \frac{\frac{\partial Q_1^p}{\partial P_1^l}}{\frac{-\partial Q_1^l}{\partial P_1^l}}$$

Essas são as taxas de desvio dentro e entre os dois lados do mercado, dentro e entre firmas, respectivamente. Os termos da segunda e terceira taxa de desvio representam o efeito do aumento de preços dos leitores do jornal 1 como resultado do aumento de preços nas propagandas do mesmo jornal e a mudança no espaço publicitário da firma 1 como resultado do aumento de preços aos leitores do mesmo jornal.

Recentemente, Cosnita-Langlais, Johansen & Sorgard (2018)[5] observaram que a abordagem de Affeldt et al, por mais que capture os efeitos

5 Cosnita-Langlais Andreea; Johansen, Bjørn Olav & Sørgard, Lars. "*Upward Price Pressure in Two-Sided Markets: Incorporating Feedback Effects.*", University of Paris Nanterre, EconomiX, EconomiX Working Papers, (2018), nr. 2018-3.

cruzados dos mercados de dois lados, ignoram o que chamam de efeito de retorno ("feedback effect"): uma mudança de preço de um lado pode retornar ao preço ótimo do outro lado do mercado, fazendo com que ele se reduza (ou aumente) no caso do aumento (ou redução) do outro lado, mesmo que não haja ganhos de eficiência e que as margens de lucro sejam não negativas. Esse efeito é bem conhecido nos mercados de tecnologia que, embora ofereçam conteúdo gratuito para seus beneficiários (ex. Google), cobram pelo espaço publicitário oferecido.

6. EXEMPLO RECENTE NO BRASIL: AQUISIÇÃO DO HSBC PELO BRADESCO

Em 2016, o Cade avaliou a compra do HSBC, então o sexto maior banco do Brasil em ativos totais, pelo Bradesco, o quarto colocado. A Superintendência-Geral do Cade, considerando os índices de concentração baseados em participação de mercado, concluiu que o percentual de participação *do* HSBC era relativamente baixo. Considerando apenas os precedentes do Conselho em análise de concentrações no setor bancário, não foi encontrado nexo de causalidade entre a operação e os problemas concorrenciais identificados no setor bancário[6].

O Departamento de Estudos Econômicos (DEE) do Cade, todavia, apontou que, a despeito da baixa participação, haveria uma pressão potencial de aumento de preços dos produtos ofertados pelo Bradesco e pelo HSBC. Essa conclusão foi obtida por meio da análise do UPP e do GUPPI para uma simulação de 7 cestas de serviços a serem oferecidas pelos bancos.

Diante da discussão metodológica, o Conselheiro-Relator do caso repetiu o cálculo dos indicadores considerando os produtos bancários de forma individualizada[7]. De maneira preocupante, o Conselheiro observou possíveis pressões de preço em 67% do total de produtos bancários. A operação foi aprovada com vários remédios comportamentais, como o incentivo à portabilidade bancária e a obrigação de não adquirir o controle de qualquer outra instituição financeira e/ou administradora de consórcio no Brasil.

6 Anexo ao Parecer Técnico n.º 12/2016/CGAA02/SGA1/SG/CADE, de 1 de abril de 2016.

7 Resende, J.P. *Voto no Ato de Concentração n.º 08700.010790/2015-41*.

7. CONCLUSÃO

O objetivo dos indicadores de pressão de preços é servir, portanto, de instrumento adicional na averiguação de casos com potenciais riscos lesivos à concorrência. Servem como indicadores preliminares para identificar, de forma rápida e com poucos dados, qual o risco de aumento de preços em uma fusão.

Apesar da baixa complexidade necessária, em termos de análise econométrico e/ou estatística, para a análise das fusões, é importante ressaltar as limitações desses indicadores. Por exemplo, eles não incorporam efeitos dinâmicos da demanda, uma vez que se tratam de dados coletados no mesmo período de tempo. De tal forma que, se os consumidores ajustam sua demanda ao longo do tempo, isso não é captado pelos indicadores.

Tampouco os indicadores captam efeitos de rede ou de retorno [os "*feedback effects*" trazidos por Cosnita-Langlais, Johansen & Sorgard (2018)]. Apesar desses autores apresentarem modificações aos indicadores, de tal forma que captem tais efeitos, eles supões que a demanda seja linear, o que se torna um problema em caso de curvas de demanda não lineares.

Assim, como alerta a publicação "Linhas de Orientação para a Análise Económica de Operações de Concentração Horizontais" da Autoridade da Concorrência de Portugal, para uma análise adequada de efeitos de fusões e aquisições, é importante considerar também as respostas dos concorrentes, como análise de entrada, expansão e/ou reposicionamento.

EUROPEAN CHAMPIONS VS. REAL CHAMPIONS: WHAT WILL IT COST YOU?*

Nuno Rocha de Carvalho

1. INTRODUCTION

There is a rising trend in talking up the promotion of so-called "European champions" at the expense of the enforcement of competition rules. This call for "European champions" echoes past national industrial policies whereby governments would prop up specific firms or sectors supposedly to enable them to lead on the international stage and thereby bring somewhat undefined benefits for their home country.

This short article will recall the industrial policy initiatives underpinning this most recent drive for government to champion certain firms, why they have been directed at competition enforcement and the cost to European consumers of heeding these calls to loosen competition rules.

2. BACKGROUND

2.1. Franco-German Manifesto and the German industrial strategy

In early February, the German government published a new industrial plan called "Industrial Strategy 2030"[1] and, some weeks later, a joint "*Franco-Ger-*

* The following short article is an abridged adaptation of the speech given at the "Women@Competition Iberia" conference held in Lisbon on May 8th, 2019. The views and opinions expressed in this text belong solely to the author and should not be deemed to reflect those of the Portuguese Competition Authority on which the author, at the time, served as a Board member.

1 Available at https://www.bmwi.de/Redaktion/DE/Publikationen/Industrie/nationale-industriestrategie-2030.pdf?__blob=publicationFile&v=24.

man Manifesto for a European industrial policy fit for the 21st Century"[2] was unveiled.

Although they ostensibly manifest adherence to the principles of open and free markets as well as investment in innovation, these initiatives ultimately call for the review and reform of existing European state-aid and competition law, the message being that competition law and its application should be relaxed to make way for the creation of European companies with a global dimension.

It is not the purpose of this communication to debate or take a position in what regards European trade policy and on what (if any) pan-European industrial policy is necessary and adequate to meet the stated challenges, nor will it dwell into the proposals and discussions surrounding the screening of non-EU investments or the call for a relaxation of state-aid rules. Its primary focus is to assess whether the calls for changes to EU competition law are warranted and how to react to their growing prevalence.

2.2. Prohibition of the Siemens/Alstom merger

It is hard to ignore that the aforementioned German and Franco-German initiatives come on the back of the failed merger between Siemens and Alstom.

The projected merger, notified in June 2018, was ultimately blocked by the Commission precisely in February of 2019. The European Commission had previously concluded, in Phase-I of its merger review procedure, that the intended tie-up raised competition concerns as it would have significantly reduced competition specifically in the markets for very-high-speed trains and railway signalling systems.

The companies argued that potential competition from competing suppliers located outside the EU, especially China, would counterweigh the effects of the merger. However, this argument was not accepted by the Commission as it concluded that whereas it would take a very long time before Chinese signalling systems suppliers can become credible competitors in the European market, in the market for very-high-speed trains, an entry of competitors into the European was highly unlikely in the foreseeable future.

2 Available at both https://www.bmwi.de/Redaktion/DE/Downloads/F/franco-german-manifesto-for-a-european-industrial-policy.pdf%3F__blob%3DpublicationFile%26v%3D2 and https://www.gouvernement.fr/en/a-franco-german-manifesto-for-a-european-industrial-policy-fit-for-the-21st-century.

One does not have to agree with the reasoning of the Commission in this case in order to oppose the suggestion that its analysis should stray towards anything else than the prevention of distortions to competition.

The job of a competition agency is to make a determination as to how the relevant product and geographical markets should be defined in order to carry out its analysis of the prospective consequences of the intended concentration between undertakings and, subsequently, carry out that analysis. It may of course legitimately be criticized in how it makes that determination, on how it conducts its analysis, and for its ultimate decision. It is wrong however to expect any of these crucial steps to take into consideration the competitiveness of local companies in the world economy or any other consideration other than the preservation of competition.

To be fair, the aforementioned Franco-German proposals accept that the purported disadvantage at which European companies operate in the World markets does not stem from an erroneous interpretation of the law by the Commission but are very explicit in concluding that it is European competition law (both hard and soft) that must change.

What they seem to overlook – or possibly discard – is that the primary single goal of competition law is not ensuring a level playing field between companies, but consumer welfare arising from the competitive process.

It is the wellbeing of consumers that lies at the centre of Competition Law, not that of corporations.

The policy choice before us can be boiled down to whether the gains *to EU citizens* of shielding large EU companies from competition rules will offset the corresponding losses they would suffer in terms of the lost benefits from competition.

Measuring these gains and losses is admittedly a tricky proposition and one best left to economists but if one were to admit, for the sake of argument, that they evened each other out, it would still be extremely difficult to see how the alleged benefits to Europe would be spread homogenously within the Union and how they would not be detrimental to the European Single Market.

3. ADVOCATING FOR COMPETITION

In order to push back against these initiatives which try to protect large European companies at the expense of consumer welfare and competition

rules, it is important that both public and private stakeholders within the competition community actively engage in promoting competition.

The benefits of competition and why it is necessary to ensure that the enforcement of competition rules is impartial, objective and independent need to be explained to the public at large.

Although advocacy efforts must keep stressing the how competition between companies ensures lower prices, more choice and innovation, they must also make the wider case that competition policy has a positive impact on the economy as a whole.

The role of competition policy is to ensure that markets work without undue interference. This in turn leads to an increase in productivity, economic growth, innovation, and consumer welfare.

Ultimately, the goal of competition policy is to prevent the excessive concentration of economic power and the abuse of such power which leads to a rising sense of inequality that threatens the very foundations of liberal democracy.

Because protecting consumer welfare is at the heart of competition rules, promoting competition is about protecting our citizens as consumers, their freedom of choice and prosperity. When we promote "European champions" and protect only companies according to their size or sector, we are not ensuring that there will be any benefits for consumers, the economy or society.

On the contrary, using competition as an industrial policy tool in order to bestow corporate giants with huge power in their home markets comes at the expense of consumers in those markets as well as the competitiveness of other firms within the champion' supply chain.

There may of course be exceptions, situations in which market failures require regulation from the State, but, as a rule, allowing political interference in the activities of competition authorities would jeopardize the independence and the tried-and-tested technical assessment of competition law enforcement.

Furthermore, allowing exceptions to the Commission's powers to block mergers on the basis of industrial policy considerations[3] carries an enormous risk that these powers would be wielded mostly in the interest of the larger

3 For instance, the abovementioned Franco-German proposal referenced in footnote 3 above proposes to "*consider whether a right of appeal of the Council which could ultimately override the Commission decisions could be appropriate in well-defined cases, subject to strict conditions*".

Member States to the detriment of other countries, thereby undermining the principles of solidarity at the heart of the European project.

Competition is the best way to create real champions in the market, domestically and abroad. Protecting companies from fierce competition annuls incentives for efficiency and innovation. European companies must be allowed to succeed, but to succeed on their merits and not through the coddling effect of preferential treatment.

Competition agencies in Europe should remain agnostic regarding nationality and play no favourites. The ensuing competition will provide the real champions the resilience they need to be the most efficient and most innovative in their respective markets. By incentivizing them to provide their European customers with the benefits of that innovation and efficiency, they will be all the more competitive as they grow to geographic markets further afield.

Therefore, public policies should rather seek to deepen integration within the European Single Market and support the initiatives that its several competition agencies undertake to promote the worldwide adoption of Europe's best practices in competition law enforcement.

4. CONCLUSION

In a well-functioning economy, industrial policy ought to be as neutral and non-distortionary of competition as possible.

This does not mean that the relevance of industrial policy should be disregarded by the EU, merely that the rivalry with other economic blocs should not be solved by lowering the standard of competition rules for a few chosen firms.

FINTECH AND ITS IMPLICATIONS FOR COMPETITION AND REGULATION

Lara Tobías Peña, José Luís Rodríguez López & Pedro Hinojo González ***

1. INTRODUCTION

The financial sector plays a key role in our societies. It is responsible for the efficient allocation of capital, which is indispensable for the proper functioning of market economies. The financial industry channels funds (capital) from savers to investors, seeking to allocate them to their most efficient purposes.

However, the functioning of the financial system is far from smooth or frictionless. Apart from operating in a context of high uncertainty, financial activities are beset by numerous market failures:

- Asymmetries of information between parties of financial transactions, thereby exacerbating the key role of information as an input in financial activities;
- Externalities, particularly the possibility of contagion from distressed agents to healthy ones;
- Market power, especially given the trend towards higher integration and concentration in some financial activities (i.e. banking) in the aftermath of the past global financial crisis;
- Public good characteristics, as the benefits of financial stability can exhibit non-excludability and non-rivalry (i.e., once provided, financial

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** Disclaimer: The opinions expressed in this article are personal and do not necessarily reflect CNMC's views.

stability benefits everyone and it is not possible to prevent any agent from enjoying it even if they did not contribute to its provision).

As a result, the financial industry is one of the most heavily regulated sectors in advanced economies, since financial regulation seeks to address these market failures on efficiency grounds.

Against this backdrop, some new business models have emerged based on the application of new information and communication technologies (ICT) to the financial sector in a disruptive way. This phenomenon is the so-called Fintech.

2. FINTECH'S CHALLENGES AND OPPORTUNITIES

This new phenomenon of Fintech has both benefitted from a window of opportunity and represents an opportunity itself.

On the one hand, the Fintech phenomenon has taken advantage of the window of opportunity posed by economic factors, following the aftermath of the global financial crisis and the weakening of the traditional banking channel, and technological ones, such as the development of ICT in the areas of artificial intelligence, big data, cloud computing, cryptography or mobile internet. Furthermore, the massive corpus of (in some cases new) regulation and the trend towards integration and concentration stimulated the possibility to enter profitably niche activities subject to lighter regulation (e.g. if one does not take deposits). An example of these activities are account aggregators, that gather information on different financial accounts of the same client, often with different financial companies, and present it in a single page or application.

On the other hand, Fintech also poses a window of opportunity. This is true as those new technologies at the foundations of the phenomenon allow for a better use of information, the key input in financial activities, both by incumbents and new entrants. As a result, Fintech may give rise to new services unavailable thus far, such as robo-advisors or platform-based businesses such as crowdfunding and crowdlending, as well as enhanced versions of traditional services, such as payment services, open banking and insurtech. From the perspective of competition, Fintech may ensure more competitive tension in financial markets thanks to the presence of new entrants and higher degrees of contestability.

These opportunities are being exploited both by newly created firms (start-ups) and by incumbents in the financial sector, in what is labelled as "FinTech in a narrow sense". But the Fintech phenomenon is much wider, since other firms are also entering the financial industry relying on their comparative advantage in ICT gained outside the financial arena, in what is tagged as "TechFin". The main example of the latter is the disruptive (potential or actual) emergence in this sector of BigTech: the main global digital platforms active in search engines, social networks, content aggregation, online retailing and mobile ecosystems. The entry of technological firms in finance offers opportunities in three (interwoven) aspects:

- Technological firms enjoy typically a light cost structure combined with scale economies, implying that they can provide financial services very competitively. This is enhanced by their widespread coverage of the population, which, relying on network effects, allows them to reach groups whose financial needs were traditionally unmet, increasing financial inclusion.
- Digital platforms possess a big amount of users' data (in terms of volume and variety) and the appropriate technology and skills to exploit them, creating a competitive advantage through learning economies (especially due to the improvement of algorithms and artificial intelligence). For instance, by accumulating data, platforms can infer consumer needs better, improve and automate credit scoring (ultimately reducing the cost of borrowing for consumer and firms), etc. Furthermore, by including financial services within its range, platforms do not only exploit these learning effects (dynamic economies of scale) driven by data accumulation, they also reinforce scope economies. For example, online retailers can offer immediate payments or credit solutions, social networks and search engines can target advertisement of products combined with financial facilities, etc. Digital platforms can offer these services as matchmakers (linking the consumers to the most attractive and tailored financial products in the market) or eventually as direct providers.
- Digital native firms tend to be very oriented to user satisfaction, since they are aware that keeping a wide base of agents is key to internalize network externalities. This helps to enhance the principle of customer centricity in financial services, increasing quality and differentiation and laying the groundwork for the unbundling of financial services (in comparison with the traditional one-stop shop model by which traditional

banks used to bundle services, which in some cases consumers had not demanded).

But the Fintech phenomenon, and specifically the emergence of (normally big) technological firms in this sector, can also raise concerns: dynamics of concentration and market power driven by network effects, the use of big data to charge excessive (personalized) prices or its role as a barrier to entry for competitors, the leveraging of market power into other sectors, etc. All these issues require a careful assessment from the standpoint of competition and regulation.

3. FINTECH'S IMPLICATIONS ON COMPETITION AND REGULATION

From the point of view of competition, Fintech offers promising opportunities but also some challenges. This warrants the typical case-by-case approach in competition, all the more so because caution is particularly advisable taking into account that many activities and firms are still incipient. An erroneous decision could stifle investment, innovation and competition in a sector where these are very much needed.

Actually, regulators in general should follow this same approach and welcome the Fintech phenomenon from different perspectives (as stated in the CNMC's "Market Study on the impact on competition of technological innovation in the financial sector", published in November 2018):

- Regulators should apply the principles of good regulation to Fintech. In other words, new Fintech business should only be restricted when it is necessary (e.g. there is a market failure) and through proportionate means (by finding the least distortive intervention and ensuring that benefits outweigh costs). For instance, one measure which should be on the agenda is the adoption of a "regulatory sandbox" regime, by which there is a controlled and limited trial period for the regulation of a new activity (so that the potential impact is assessed) before adopting a definitive response. This could be reinforced by "innovation hubs" through which regulators and firms learn from each other in interpreting regulations and business models, reducing regulatory uncertainty.
- In this regard, it is important to recall that Fintech is an opportunity to revisit all the already existing pieces of regulation affecting the financial sector. Since the new technologies and business models may help

to tackle (at least partially) some market failures (notably, information asymmetries), there is room to reassess the motivation of many of the existing requirements (physical presence, rules on internal organization, etc.). Therefore, the possible set-up of a lighter and more rational regulatory framework is an opportunity both for new entrants and incumbents.

- One of the principles for this new mindset in the financial sector is a functional approach to regulation. Since market failures are connected to activities (not to entities, despite the focus of traditional regulation on these), the same activity should carry the same regulation, regardless of the legal form, the technology used, etc. In this same vein, "reserves of activity" should be avoided to the maximum extent possible, since they preclude the exploitation of scope and network economies.
- Another opportunity to reformulate regulation is the Regtech phenomenon, which is a subsegment of Fintech consisting in applying ICT to the compliance with financial regulation and supervision (in order to improve and automate the process and, ultimately, reduce costs). Therefore, watchdog authorities should revamp regulation and supervision so that compliance and monitoring is streamlined, taking advantage of new innovations.
- Finally, this overhaul of financial regulation should include the principles of open banking (and insurance), notably technological neutrality and interoperability. These are actually a reality in the EU (thanks to the Payment Services Directive, PSD2), although their implementation can be challenging. Therefore, regulators must ensure that these principles are enacted so that competition on the merits is not distorted and new business models flourish and develop, especially in the area of payments.

The adoption of this response to the Fintech phenomenon from the standpoint of good regulation can help to grasp the opportunity to improve competition in the financial sector and to improve efficiency and welfare in the overall economy.

AMENDMENT OF THE COMPETITION ACT NOTES ON PAST EXPERIENCE ON THE TIMING, MILESTONES AND SCOPE

*Margarida Rosado da Fonseca**

When preparing the Conference celebrating its 10 years of existence, the Portuguese Association for Competition Lawyers ("CAPDC") had the aim of choosing the most acute topics focusing on the Portuguese Competition framework and its specificities, without prejudice to the relevance of the EU competition environment. Thus, the amendment of the current Competition Act ("2012 Act") and the Competition Authority's ("AdC") bylaws resulting from the implementation of Directive (EU) 2019/1 ("Directive ECN+") were a natural choice. Moreover, the Government seems to aim at presenting the proposal of Law with the amendments much before the time-limit for the said implementation and an informal working group has been set to discuss it with the AdC.

But CAPDC's proactive approach for the discussion of competition rules and enforcement in Portugal[1] advised for anticipating a timely discussion of amendments to the 2012 Act which are "beyond ECN+" (in the sense that they are not directly linked with the same). The 2012 Act was adopted during the Economic and Financial Assistance Programme to Portugal by the European Commission, the European Central Bank and the International Monetary Fund (together "international creditors"), following the request for financial assistance by the Portuguese authorities (XVIII Government and Bank of Portugal) on April 7th, 2011. Such assistance was conditional upon implementation by the latter notably of a set of structural measures contained

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1 "A propósito dos dez anos do Círculo dos Advogados Portugueses de Direito da Concorrência", Carlos Pinto Correia in *Revista de Concorrência e Regulação*, nr. 38, April/June 2019.

in the economic adjustment programme ("Programme") agreed in May 2011 and their progress in implementation was monitored through quarterly (and continuous) quantitative performance criteria, structural benchmarks and quarterly programme reviews.

One of the cornerstones of the Programme consisted in strengthening the competitiveness of the economy by "ensuring a level-playing field" while "minimizing rent-seeking". In this context, the Portuguese authorities committed to revise the 2003 Competition Act ("2003 Act") in line with the aim of increased convergence with the European Union (EU) competition legal framework. In practice, this revision soon evolved into the adoption of a new Act and providing that it concerned a structural benchmark of the Programme one may guess that there was important interaction with the international creditors (especially with Directorate-General for Competition of the European Commission). Though this may help to contextualize some of the modifications having been introduced, it must be noted that, in the preceding year, the President of the AdC publicly mentioned what would be the "necessary" amendments for strengthening of the competition enforcement[2]. Unsurprisingly, they arguably included the reinforcement of enforcement powers of the AdC beyond what one could expect from Portugal's obligations as Member State of the European Union and seem to have paved the way to the specific guidelines of the Programme for the amendment of the Act.

The Programme provided for a very ambitious timeframe for the amendment of the 2003 Act, as moreover its adoption was intertwined with structural measures such as the enactment of a Framework Law for the functioning of independent regulatory authorities (and subsequent amendment of the AdC's bylaws) and the creation of a specialized tribunal for Competition, Regulation and Supervision. Notwithstanding, the XIX Government decided to undertake a public consultation of the draft Act while setting up an *ad hoc* working group comprising different stakeholders who discussed the contributions received and proposed further amendments whenever adequate. Besides contributions received by the Government even before the public consultation (at least the ones from the AdC and from the CAPDC), at least 26 entities presented comments (and in several cases, alternative wordings) during the 30-day public consultation. Besides the CAPDC, amongst them are included law firms, undertakings of various sectors of

2 This information was conveyed to Parliament during its annual hearing on the performance of the AdC.

activity (such as beverages and telecoms ones), several associations of undertakings and confederations, which reflects the relevance of this measure for the stakeholders. Beyond the difference of approach which may be explained by their distinct backgrounds and views of competition law enforcement, it should be noted that there are common features which are worthwhile considering in future amendments of the Competition framework. After the Government presented a proposal of Law to Parliament, the latter institution requested Opinions to the High Council of the Public Prosecution Service, to the Superior Council of the Judiciary and to the Bar Association during the internal legislative procedure. These included comments on the material and procedural features of the investigatory powers of the AdC, which maintain their acuteness in the light of future amendments to the extent there are specificities concerning the quasi penal nature of the procedure and the broadness of the AdC' scope of action.

Regard should be taken to the circumstance that, over the last 47 years, Portuguese competition laws have been adopted on average every decade. More precisely, what may be considered the "first" Competition Act dates from 1972, the "second" one was adopted in 1983 and the "third" one a decade later. It should be highlighted that in 2002 the XIV Government created an *ad hoc* commission of three experts for the preparation of a timetable and proposals concerning the drafting of a new Competition Act and the creation of an independent Competition Authority. Even though the following year the government which took office adopted a somewhat different approach concerning the initial aims of the working group's mandate, it still considered nevertheless several features of its proposals[3]. The "fourth" Competition Act was adopted in June 2003, shortly after the creation of an independent Competition Authority. As referred above, the current Act dates from 2012. Notwithstanding several of its features continue to be dealt with by the competent courts in appeals which are pending, several lessons can already be drawn from recent jurisprudence of national courts and also from the AdC's decisional practice.

I believe that even before the end of 2019 it is advisable to start a thorough, considered and dispassionate reflection on the timing, milestones and scope of the amendments to the 2012 Competition Act "beyond ECN+".

3 "Introduction to the new Competition legal framework – Difficulties of modernization projects" by José Luís da Cruz Vilaça, in *Competition – Studies*, jointly coordinated by António Goucha Soares and Maria Manuel Leitão Marques, Almedina editions, June 2006, pp. 13 and following.

This is due to all that has been said above, my experience in participating in the 2011 *ad hoc* working group and also considering the ongoing work for implementation of Directive ECN+. On the one hand, it is expected that ECN+'s impact on the current Act and the AdC's bylaws results in significant reinforcement of the latter's (already broad) enforcement powers. Criticism concerning an "unbalanced system" when considering notably the rights of defence of undertakings being investigated and access to file in the context of misdemeanour proceedings, gains new momentum if no measures are adopted to introduce increased duties (including in terms of the duration of the investigations) and accountability (both in the administrative and judicial phases of the proceedings). Thus, ideally the amendments "beyond ECN+" should be adopted simultaneously with the implementation of Directive ECN+. Moreover, the time-limit for the latter implementation is February 4th, 2021 and there are advantages in avoiding successive amendments of the same Act.

On the other hand, when deciding on the scope of the amendments "beyond ECN+", it would be most useful to build on the experience gained from the 2011/2012 procedure envisaging the adoption of the 2012 Act. Most relevant features may be summarized as follows:

(A) Importance of ensuring a timely participation of stakeholders in the legislative process and due analysis and discussion of their comments by an insightful working group comprising representatives from the judiciary, jurists, the AdC and most involved associations such as the CAPDC;
(B) Evaluation of maintenance of legal provisions where there was no widespread consensus on its amendment or even elimination, as well as the ones without practical application - For instance, as regards article 12 ("Abuse of economic dependence");
(C) Assessment of the adequateness of the novelties introduced in the 2012 Act (notably taking into consideration recent jurisprudence) - It is the case, amongst others, of the rule of non-suspensive effect of the judicial appeals [article 84(4) and (5)]; the systematic framework of the legal basis for the exercise of supervisory powers by the AdC (before formally initiating the investigation pursuant to article 17) – commonly based in articles 43 and 61 and following; the imposition of measures deemed "necessary and adequate to restore a situation prior to a concentration [including reversal of the operation or

cessation of control" with no statute of limitations according to article 56 (4)];

(D) Taking into consideration the developments in the EU and Portuguese competition systems occurred since 2012, such as the enactment of Law Nr. 23/2018 of June 5, which implements the Directive on Antitrust Damages Actions and the advantage in harmonizing the wording with the Act;

(E) Reinforcement of advocacy of competition beyond the AdC's action, notably admitting that effective Competition compliance programs by groups of undertakings participating in anticompetitive practices may be an attenuating circumstance when calculating the amount of the fine;

(F) Envisaged clarification and streamlining of the provisions raising interpretative doubts either because of their wording or because of their necessary joint application with legislation from other fields of Law, such as Public Procurement [an example being article 37(3) on the control of concentrations] or sector-specific legislation (such as the application of article 55 in concentrations in the media sector, given that ERC - *Entidade Reguladora para a Comunicação Social* may have a binding opinion in the merger control proceedings).

Regardless to say that ultimately it is for the legislator to decide from a broader perspective the degree of strengthening of the competition enforcement in the overall context (of sector specific regulation, powers of sectoral regulators, amongst other considerations), within the obligations which Portugal has as Member State of the EU.

REVIEW OF THE PORTUGUESE COMPETITION ACT – THE SEVEN YEAR ITCH*

*Tânia Luísa Faria***

INTRODUCTION

Within the context of the transposition of the Directive (EU) 1/2019, of 14 January 2019, commonly known as the ECN+ Directive, which will imply several amendments to Law 19/2012, of 8 May (the "Portuguese Competition Act"), the Portuguese competition law community, under the impulse of the Portuguese Competition Authority ("PCA"), has been debating the opportunity for further amendments to the Portuguese Competition Act. At this stage, we are not going to discuss the appropriateness of the protagonism of the PCA within this context (even though we generally disagree with its prominent role in the preparation of laws that it will subsequently enforce).

In fact, seven years after the entry into force of the Portuguese Competition Act, stakeholders have had the time to take note of the shortcomings in this legal framework. Furthermore, as sometimes happens in long-term relationships, certain stakeholders seem to be itching for a change, as the Portuguese competition framework appears to be less capable of meeting their needs. On the one hand, enforcers want more ambitious enforcement tools and, on the other hand, undertakings, individuals and their legal representatives are concerned with the increasing restriction of their fundamental rights.

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* Article based on the author's presentation in the conference commemorating the 10th anniversary of the *Círculo dos Advogados Portugueses de Direito da Concorrência* (Lisbon, 12.04.2019).

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In our view, the majority of the limitations of the Portuguese Competition Act within the last few years result from an approach to competition law, particularly from the enforcers, as if it were an "orphan" legal framework setting forth exceptional solutions that are divorced from the legal system. In fact, as we will subsequently demonstrate, many of the limitations of the Portuguese Competition Act have a clearer, more balanced, solution in the general rules applicable to several matters.

In this regard, we should bear in mind that competition law is both administrative law and quasi-criminal misdemeanour law (*direito das contraordenações*). Consequently, prior to economic and psychological considerations, the core of any amendment to the Portuguese Competition Act should certainly entail a broad, in-depth dialogue between competition specialists and legal experts working in relation to misdemeanours and more generalist administrative law.

This does not mean that, as legal practitioners, we do not have our own wish list for potential changes to the Portuguese Competition Act. This also does not mean that we shy away from sharing it. This only means that structural changes cannot be motivated by non-structural conditions, as Richard Sherman had concluded by the end of the movie mentioned in the title of this article[1].

These suggestions derive from our experience, using the Portuguese Competition Act on a daily basis in the last few years, and focus only on the practical aspects we consider relevant to discuss within the available timeframe, as this stage, outside the scope of the transposition of the Directive ECN+, and without prejudice to further developments on this matter.

1. MERGER CONTROL

As regards merger control, we have been confronted with practical issues related to the filing and to the formal steps of the proceedings, but we also want to address the current hot topics in terms of merger control, including the need to adapt merger control thresholds to digital markets and the potential inclusion of industrial policy considerations in the assessment of mergers.

1 Reference to the 1955 movie the Seven Year Itch, directed by Billy Wilder.

1.1 Thresholds

According to our experience, in general, the merger control thresholds set forth in the Portuguese Competition Act seem to be adequate for the Portuguese economy.

In our opinion, the market share thresholds, which have been contested on many occasions in the past, have revealed themselves to be a useful tool to monitor developing markets; including markets based on IT, commonly designated as digital markets.

In particular, the market share thresholds could be, in our view, an important alternative to innovative thresholds such as the transaction value threshold recently introduced in Austria and in Germany[2]. The uncertainty issues traditionally attributed to market share thresholds could be less relevant if compared to the very burdensome task of determining the value of the transaction, considering the complexity of M&A instruments, the applicable accountability rules and the possible attempts to manipulate the figures[3].

1.2 Timing of the Filing

The provisions concerning the timing of the filing have raised some issues in insolvency and public tender cases.

As regards insolvency procedures, Article 36(4) of the Portuguese Competition Act only mentions that no concentration exists when the insolvency administrator acquires the management of the insolvent assets. If a third party, approved by the competent court, acquires the insolvent party's assets after the submission of an insolvency and recovery plan, the Portuguese Competition Act provides no guidance. Since such an acquisition would take place after a complex judicial procedure, which cannot be subject to a condition precedent related to merger control requirements, the appropriate moment to submit a filing would, in our view, be after the homologation of the insolvency and recovery plan by the court. In any case, insolvency acquisition cases, which became more frequent after the financial crisis, would benefit from some further clarification and better coordination between judicial cases and administrative proceedings subject to a standstill obligation.

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2 For more developments, please refer to https://www.competitionpolicyinternational.com/new-merger-control-guidelines-for-transaction-value-thresholds-in-austria-and-germany/.

3 For a critical appraisal, please refer to https://www.hlregulation.com/2018/05/16/hunting-unicorns-german-and-austrian-competition-authorities-publish-draft-guidance-note-on-transaction-value-thresholds/

In public tender cases, Article 37(2) of the Portuguese Competition Act sets forth that the filing should take place after the definitive award of the contract. This provision raises significant challenges, worthy of further reflection, concerning what can be considered a definitive award, the coordination with exclusive rights and public interest services, the role of competition ex-ante and ex-post and the potentially anticompetitive impact of the merger control framework within this ambit.

1.3 Role of Third Parties

Article 47 of the Portuguese Competition Act, differently to what takes place at the EU level, and also, for instance, in Spain, allows the formal intervention of interested third parties opposing the concentration within Phase I. This is clearly different from the informal submission of comments by third parties, which is always possible and does not grant these entities a procedural role.

This intervention takes place right after the submission of the filing, within the ten business days set forth in the act, introducing, in our view, some level of disruption in the merger control proceedings from the very beginning, even before the PCA has had the opportunity to get acquainted with the filing party's arguments.

Also, interested third parties can delay the issuance of a final decision, for an additional deadline of 20 business days (a month), even in cases where no competition concerns exist, in Phase I, using the right to a prior hearing granted in Article 48(3) of the Portuguese Competition Act.

Consequently, this mechanism should be re-examined, at least in relation to the prerogatives and deadlines applicable within this ambit.

1.4 European / National Champions

Within the last few months, following the prohibition, by the European Commission ("EC"), of the Siemens / Alstrom concentration, France and Germany initiated a discussion on the inclusion of industrial policy within the purposes of competition law. We have had the opportunity to contest this return to the protectionist past, as well as to challenge the potential coordination between the idea of European champions and the advancement of Franco-German national champions[4].

4 Please refer to our article of 15 March 2019, available at https://eco.sapo.pt/opiniao/propostas-de-alteracao-da-politica-controlo-de-concentracoes-da-ue-no-sentido-da-criacao-de-campeoes-europeus-uma-especie-de-deja-vu/

Therefore, in our view, any amendment in this regard should be totally rejected. Furthermore, perhaps it is time to do exactly the opposite, by excluding the "dead letter" of Article 41 of the PCA's By-laws that allows the Minister of the Economy to overcome a prohibition decision by the PCA, by invoking the strategic interests of the Portuguese economy.

2. RESTRICTIVE PRACTICES

As regards restrictive practices, we understand that Articles 9 and 11 of the Portuguese Competition Act, prohibiting, respectively, restrictive agreements and concerted practices, as well as abuses of a dominant position, are consistent with Articles 101 and 102 of the Treaty on the Functioning of the European Union ("TFEU"), notwithstanding the interpretative and constitutional difficulties that these provisions, formulated as general principles, generate on their own.

We suggest, however, that there should be a definitive harmonisation of the wording of Article 9 of the Portuguese Competition Act with Article 101 of the TFEU as regards the restrictive objective of the conduct. The mistaken translation of "restriction by objective" as "restriction by object" should be finally put to rest.

2.1 Abuse of Economic Dependency

As far as we are aware, Article 12 of the Portuguese Competition Act has been, up until now, "dead letter" and, as a principle, we oppose dead letter provisions. However, legislation on the abuse of economic dependency seems to have been experiencing a "second life" as a tool to prevent abuses in digital markets. It is referred to as being desirable in the Furman Report and a provision of this type was recently incorporated by the Belgian legislator in the Code of Economic Law[5].

5 For further developments, please refer to https://www.lexgo.be/en/papers/distribution-concurrence--consommation/commercial-practices/new-belgian-rules-against-abuse-of-economic-dependence-changes-in-b2b-relationships,127425.html. As regards the Furman Report, which makes recommendations for changes to the UK's competition framework, available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/785547/unlocking_digital_competition_furman_review_web.pdf, recommendation 5 sets forth that "*To account for future technological change and market dynamics, the digital markets unit should be able to impose measures where a company holds a strategic market status – with enduring market power over a strategic bottleneck market. The 'significant market power' test in telecoms regulation provides a good starting point. Aspects of market power particularly relevant to platforms and their potential to act as a bottleneck should also be considered for incorporation: economic dependence, relative market power and access to markets*".

In any case, taking a lead from the Belgian regime, perhaps it would be advisable to include further elements to determine the existence of a situation of economic dependence and the maximum amount of the fine should, at least, be limited in these cases, in order to state the difference in terms of seriousness of an abuse of economic dependence if compared, for instance, to the maximum 10% fine applicable in case of an abuse of a dominant position[6].

2.2 Antitrust Procedure

We understand that the rules setting forth deadlines for the PCA to conclude an antitrust investigation, prior to, and after, issuing the statement of objections, *i.e.*, Articles 24 and 29 of the Portuguese Competition Act, respectively, and which were probably inspired by the Spanish legal framework, have not represented added value to the PCA's practice.

Differently to what takes place in Spain, these deadlines are not mandatory and there are virtually no limits to the unilateral extensions by the PCA. In some cases the PCA has extended the deadline on three or four occasions, without any other justification than the complexity of the case, prior to the end of the deadline and even after the end of the deadline initially established.

In our view, these provisions would only serve their purpose if they were mandatory or, at least, if the number of extensions were limited.

2.3 Seizing of Documents and Access to File

Interpretative concerns by the PCA have also given rise to several difficulties regarding access to the file by the addressees of statements of objections, considering the confidential nature of a significant part of the PCA's file and the obstinate refusal by the PCA to exclude irrelevant (and confidential) information from its file. In our view, the issue in this case is not so much the law, but the equivocal interpretation of the existing provisions regarding the type of information that can be included in the PCA's file, as well as the parsimony of the enforcers in resorting to the applicable subsidiary legislation under Article 13 of the Portuguese Competition Act.

6 Under the Belgian provision, economic dependence corresponds to "*an undertaking's position of submissiveness towards one or more other undertakings that is characterised by the absence of a reasonable equivalent alternative, available within a reasonable period of time, and under reasonable conditions and costs, allowing this or each of these undertakings to impose obligations or conditions that cannot be obtained under normal market circumstances.*"

Besides the provisions of Articles 20 and 31 of the Portuguese Competition Act, and even though we do not usually support the inclusion in special law of provisions already present in the general, subsidiarily applicable, law, perhaps it could be advantageous to clearly incorporate the idea derived from the joint interpretation of Article 124 and 186 of the Penal Procedure Code. Specifically, that the PCA cannot seize and maintain information in the file which has no connection with the object of the investigation, and that all information that does not comply with this requirement should be immediately excluded from the file and returned to the addressees (in the case of hard copies) or destroyed (in the case of digital files).

3. MISCELLANEOUS

Finally, we consider it necessary to mention more general issues that could also be worth subjecting to public debate.

3.1 Deadlines

On several occasions, we have been faced with the lack of a clear deadline for the PCA to reply to the requests or claims made by undertakings or by individuals, including requests for access to the file and requests to protect the fundamental rights of undertakings and individuals. In practice, according to our experience in merger control and antitrust cases, the replies vary from a couple of weeks to more than a month.

Even though we consider the general deadline resulting from Administrative Procedures Code to be applicable to these cases, it would be useful, in practical terms, to avoid unnecessary limbos – harmful to the parties' rights to a fair and speedy process – to establish a subsidiary deadline for the PCA within this context. This could probably be a maximum of 10 business days, and applicable to all matters that do not have a specific deadline set forth in the Portuguese Competition Act.

Furthermore, as regards appeals deadlines, even though common sense and the Portuguese Constitution determine that the appellant cannot have a deadline to submit an interlocutory appeal that is shorter than the deadline the PCA has to reply to that appeal, Article 85(1) of the Portuguese Competition Act has raised debate on this issue. To our knowledge, in several cases, the interpretation of this Article has determined the submission by the appellants of appeals within 10 days, which manifestly limits these entities' capacity to exert their rights of defence. It is imperative to clarify that the 20

business days' deadline set forth on Article 85(1) of the Portuguese Competition Act is applicable to both parties.

Finally, the 30 business days deadline to appeal a final misdemeanour decision, set forth in Article 87(1), could also be reviewed, considering the complexity of antitrust investigations, and the size of the case files. A two months deadline could be considered.

3.2 Sanctions and Ancillary Sanctions

In terms of sanctions, we understand that, similarly to the debate that took place in Spain and Germany, constitutionality issues arise regarding the general maximum threshold of 10% set forth for a group of heterogeneous actions or omissions, which are very different in terms of seriousness and impact. Consideration should be given in order to guarantee the full compatibility of these provisions with the principles of legality, guilt and harm. Additionally, similarly to what takes place in other misdemeanours, specific ranges should be established within the 10% limit allocated to a certain type of actions, using the impact and seriousness of the infringement as criteria.

Also, the ancillary sanction to prevent the infringing entity from participating in public tenders and other biding processes, set forth in Article 71(1) (b) of the Portuguese Competition Act, is another example of a dead letter provision that should be revised. Furthermore, this sanction would have harmful effects on competition by limiting the number of participants in subsequent tender and bidding processes. Consequently, it should also be reassessed.

3.3 Joint Liability

In our view, the principles of guilt and harm applicable to sanctions under public law create significant limitations on joint liability for misdemeanours or for the payment of the fine that could be imposed. However, public enforcers in the field of competition naturally consider joint liability as a useful tool to ensure the effectiveness of competition provisions.

Take, for instance, Article 73(8) of the Portuguese Competition Act, which sets forth joint liability of the board members of a trade association for the payment of a potential fine arising from an anticompetitive decision of trade association. Even though it is possible to exclude liability by evidencing the opposition to the decision in writing, in practice, this exclusion is very difficult, especially for board members that were only appointed after

the alleged decision. It is also inconsistent with the liability for infringements of a similar nature within the Portuguese legal system.

3.4 Appeals

Articles 84 and the following of the Portuguese Competition Act are among the most pressing issues deriving from the implementation of this legal framework.

As we have extensively put forward, the current regime has to be systematically interpreted, in order to ensure that the addressees of PCA's decision have full access to the courts[7]. However, a change in the wording of these provisions would help to reduce the extensive litigation derived from these shortcomings.

On one hand, appeals from sanctioning decisions should have suspensive effects, since, due to the amount of the fines applicable to undertakings in antitrust infringement proceedings, which can result in sanctions higher than the highest criminal fine applicable in Portugal, the absence of suspensive effects would breach the presumption of innocence. In any case, the advanced payment of the fine while the appeal in pending – except if significant financial difficulties are demonstrated, in which case a deposit would be allowed – raises significant constitutionality issues and is clearly inconsistent with the EU practice and the rules applicable to appeals in other misdemeanour offences which entail, it should be highlighted, lower fines.

On the other hand, appeals from interlocutory decisions should have suspensive effects when mere devolutive effects would render the appeal useless. As stated, it is not necessary for the competition law framework to sets forth specific solutions for all issues, but it should at least, not give rise to uncertainty regarding the application of the general rules on interlocutory appeals as set forth in the Penal Procedure Code. In this case, Article 84 of the Portuguese Competition Act should by reviewed in order to refrain from limiting the application of Articles 407 and 408 of the Penal Procedure Code in relation to antitrust investigations.

7 Faria, Tânia Luísa, *Os efeitos dos recursos judiciais em processo de contraordenações da Autoridade da Concorrência: uma interpretação sistemática*, Revista de Concorrência e Regulação 32, 2017: 146-166.

4. FINAL REMARKS

In view of the above, without prejudice to our initial observations advising caution on this matter, and also subject to further input within the appropriate forums, there is certainly room for improvement in the Portuguese Competition Act.

We have focused on the practical matters deriving from our experience, rather than on proposing a radical change of paradigm in competition law in Portugal or arguing in favour of a hasty change to accommodate the so-called "digital economy" that we are not currently able to fully anticipate, but that we cannot exclude in subsequent debates.

The law cannot, and should not, set forth all the possible hypotheses for its subsequent implementation. In our view, the main aspects to safeguard within this context derive from the applicable constitutional principles, which require the full observation of the rights of defence, access to justice and also of the requirements regarding legality, guilt and harm.

We are not advocating in favour of more rights for the addressees of competition investigations regarding restrictive practices. On the contrary, we are requesting the same rights for entities subject to investigations and sanctions of the same nature.

JURISPRUDÊNCIA

Jurisprudência geral

JURISPRUDÊNCIA GERAL

JURISPRUDÊNCIA NACIONAL DE CONCORRÊNCIA – JULHO DE 2019 A SETEMBRO DE 2019

elaborado por Margarida Caldeira

Acórdão do Tribunal da Relação de Lisboa (9.ª Secção), de 27.06.2019, proferido no Processo n.º 44/13.2TOLSB-A.L1.

Sumário: Julga não provido o recurso interposto pela empresa recorrente do despacho do Juiz de Instrução Criminal pelo qual se considerou que, após a validação, pelo Tribunal de Instrução Criminal, das diligências instrutórias de busca e apreensão (que, no caso em apreço, teriam de ser, nos termos da lei, validadas por tal entidade), é a AdC que detém exclusivamente a competência para o eventual desentranhamento de documentos apreendidos.

Normas relevantes: arts. 9.º, 17.º, 18.º, n.º 1, al. *c)* e 20.º, n.ºs 1, 6 e 8 da LdC; art. 101.º do TFUE; art. 186.º do CPP; art. 70.º do DL n.º 298/92, de 31 de dezembro.

Sentença do Tribunal da Concorrência, Regulação e Supervisão, de 11.07.2019, proferida no Processo n.º 225/15.4YUSTR-M.

Sumário: Nega provimento ao recurso interposto, entendendo que as normas da LdC não concedem às co-visadas o direito de assistir a diligências complementares de prova de inquirição de testemunhas, quando tais diligências hajam sido requeridas por outras visadas, contanto o necessário direito ao contraditório se efetivará no momento processual próprio com as limitações decorrentes do procedimento contra-ordenacional.

Normas relevantes: arts. 25.º e 26.º da LdC; art. 32.º, n.º 10 da CRP; art 289.º do CPP.

Sentença do Tribunal da Concorrência, Regulação e Supervisão, de 11.07.2019, proferida no Processo n.º 225/15.4YUSTR-K.
Sumário: Nega provimento ao recurso interposto, mantendo a decisão interlocutória da AdC impugnada nos autos, relativamente à qual o Tribunal concluiu que continha suficiente fundamentação, sem ser assim necessária a aferição judicial do mérito da classificação de um documento, no contexto do fornecimento de informações e documentos solicitados pela AdC ao abrigo do artigo 30.º da LdC e da respetiva classificação como confidenciais ou não confidenciais.
Normas relevantes: art. 30.º da LdC.

Sentença do Tribunal da Concorrência, Regulação e Supervisão, de 23.09.2019, proferida no Processo n.º 71/18.3YUSTR.I.
Sumário: Decide julgar totalmente improcedente o recurso de impugnação de decisão interlocutória da AdC, entendendo que esta foi legal e conforme ao regime processual no segmento em que se recusou a conhecer da invalidade, por nulidade, das apreensões de ficheiros de correio eletrónico a coberto de mandado de busca e apreensão emitido pelo Ministério Público e ao abrigo dos artigos 18.º, n.º 1, als. *c)* e *d)* e n.º 2 e 21.º da LdC.
Normas relevantes: arts. 15.º, n.º 1, 18.º, n.º 1, als. *c)* e *d)* e n.º 2, 21.º, 31.º, n.º 5, 68.º, n.º 1, al. *j)*, 69.º e 88.º da LdC; arts. 18.º, n.º 2, 20.º, n.ºs 1 e 5, 29.º, n.ºs 1, 3 e 4, 32.º, n.ºs 2, 8 e 10, e 268.º, n.º 4 da CRP; arts. 57.º, 119.º, 120.º, 124.º, 126.º e 174.º a 186.º do CPP; art. 50.º do RGCO.

Acórdão do Tribunal da Relação de Lisboa (3.ª Secção), de 25.09.2019, proferido no Processo n.º 229/18.5YUSTR-L2.
Sumário: Concede provimento parcial ao recurso interposto pela empresa visada da decisão do Tribunal da Concorrência, Regulação e Supervisão que negou total provimento ao recurso, anteriormente interposto (da decisão interlocutória da AdC que indeferiu nulidades e irregularidades arguidas no final de uma diligência de busca e apreensão), por entender que a decisão deste Tribunal padece de omissão de pronúncia, determinando, assim, que o mesmo se pronuncie sobre algumas das questões objeto de impugnação e confirmando, no mais, a decisão recorrida.
Normas relevantes: arts. 424.º, n.º 2; 368.º e 369.º do CPP.

Acórdão do Tribunal da Relação de Lisboa (2.ª Secção), de 12.09.2019, proferido no Processo n.º 3/18.9YQSTR.S1.L1.L1.
Sumário: Julga improcedente o recurso interposto pela empresa visada, considerando que um visado num processo sancionatório por indícios de práticas restritivas da concorrência, dirigido pela AdC, não pode intentar uma ação administrativa para que se decida que a atuação da AdC na obtenção de prova (correspondência), naquele processo sancionatório, foi ilegal e que a correspondência assim obtida lhe deve ser devolvida.
Normas relevantes: arts. 83.º a 89.º da LdC; art. 112.º, n.º 1 da Lei n.º 62/2013, de 26 de agosto (Lei Orgânica do Sistema Judiciário).

Sentença do Tribunal da Concorrência, Regulação e Supervisão, de 03.07.2019, proferida no Processo n.º 71/18.3YUSTR-J.
Sumário: Julga totalmente improcedente o recurso de impugnação de decisão interlocutória da AdC, por a considerar legal e conforme ao regime processual, designadamente no segmento em que manteve a apreensão de documentos, por estar a coberto de mandados de busca e apreensão emitidos pelo Ministério Público e ao abrigo dos artigos 18.º, n.º 1, als. *c)* e *d)* e n.º 2 e 21.º da LdC.
Normas relevantes: arts. 18.º, n.º 1, als. *c)* e *d)*, 19.º a 21.º, 30.º, n.º 1, e 85.º, n.º 1 da LdC; arts. 20.º, n.ºs 1 e 5, 29.º, n.ºs 1, 3 e 4, 32.º, n.º 10 e 268.º, n.º 4 da CRP; art. 6.º da CEDH; art. 55.º do RGCO; arts. 119.º, 120.º e 174.º a 186.º do CPP; art. 112.º, n.º 1 da Lei n.º 62/2013, de 26 de agosto (Lei Orgânica do Sistema Judiciário); art. 32.º da Diretiva (UE) 2019/1 do Parlamento Europeu e do Conselho de 11 de dezembro de 2018.

Sentença do Tribunal da Concorrência, Regulação e Supervisão, de 03.07.2019, proferida no Processo n.º 71/18.3YUSTR-K.
Sumário: Julga totalmente improcedente o incidente de impedimento ou suspeição de um instrutor da AdC.
Normas relevantes: arts. 39.º e 40.º do CPP.

JURISPRUDÊNCIA DE CONCORRÊNCIA DA UNIÃO EUROPEIA – DE JULHO A SETEMBRO DE 2019

Elaborado por Fernando Pereira Ricardo

Acordos, decisões de associações de empresas e práticas concertadas

Acórdão do Tribunal Geral de 24 de setembro de 2019, proferido no âmbito do Processo T-466/17; ECLI:EU:T:2019:671

Partes: Printeos, S.A., e o./Comissão

Descritores: Concorrência – Acordos, decisões e práticas concertadas – Mercado dos envelopes *standard*/ de catálogo e especiais impressos - Decisão que declara a existência de uma violação do artigo 101.º do TFUE – Anulação parcial por violação do dever de fundamentação – Decisão de alteração – Procedimento de transação – Multas – Montante de base – Adaptação excecional – Montante máximo de 10% do volume de negócios global – Artigo 23.º, n.º 2, do Regulamento (CE) n.º 1/2003 – Princípio *non bis in idem* – Segurança jurídica – Confiança legítima – Igualdade de Tratamento – Cúmulo de sanções – Proporcionalidade – Equidade – Jurisdição.

Acórdão do Tribunal Geral de 24 de setembro de 2019, proferido no âmbito do Processo T-105/17; ECLI:EU:T:2019:675

Partes: HSBC Holdings plc e o. /Comissão

Descritores: Concorrência – Acordos, decisões e práticas concertadas – Sector dos produtos derivados de taxas de juro expressas em euros – Decisão que declara a existência de uma infração ao artigo 101.º do TFUE e ao artigo 53.º do Acordo EEE – Manipulação das taxas de referência interbancárias Euribor – Troca de informação confidencial – Restrição da concorrência pelo objeto – Infração única e continuada – Coimas – Montante

de base – Valor das vendas – Artigo 23, n.º 2, do Regulamento (CE) n.º 1/2003 – Dever de fundamentação.

Acórdão do Tribunal Geral de 12 de julho de 2019, proferido no âmbito do Processo T-8/16; ECLI:EU:T:2019:522

Partes: Toshiba Samsung Storage Technology Corp e o./Comissão

Descritores: Concorrência – Acordos, decisões e práticas concertadas – Mercado dos leitores de discos óticos – Decisão que declara uma infração ao artigo 101.º TFUE e ao artigo 53.º do Acordo EEE – Acordos que tinham por objeto procedimentos concursais organizados por dois fabricantes de computadores – Violação das formalidades essenciais e dos direitos de defesa – Competência da Comissão – Alcance geográfico da infração – Infração única e continuada – Princípio da boa administração – Orientações de 2006 para o cálculo das coimas.

Acórdão do Tribunal Geral de 12 de julho de 2019, proferido no âmbito do Processo T-1/16; ECLI:EU:T:2019:514

Partes: Hitachi-LG Data Storage, Inc e o./Comissão

Descritores: Concorrência – Acordos, decisões e práticas concertadas – Mercado dos leitores de discos óticos – Decisão que constata uma infração ao artigo 101.º TFUE e ao artigo 53.º do Acordo EEE – Acordos que tinham por objeto procedimentos concursais organizados por dois fabricantes de computadores – Competência de plena jurisdição – Violação do princípio da boa administração – Dever de fundamentação – Ponto 37 das Orientações de 2006 para o cálculo do montante das coimas – Circunstâncias particulares – Erro de direito.

Acórdão do Tribunal Geral de 12 de julho de 2019, proferido no âmbito do Processo T-772/15; ECLI:EU:T:2019:519

Partes: Quanta Storage, Inc./Comissão

Descritores: Concorrência – Acordos, decisões e práticas concertadas – Mercado dos leitores de discos óticos – Decisão que declara uma infração ao artigo 101.º TFUE e ao artigo 53.º do Acordo EEE – Acordos que tinham por objeto procedimentos concursais relativos a leitores de discos óticos para computadores portáteis e computadores de secretária – Direitos de defesa – Dever de fundamentação – Princípio da boa administração – Coimas – Infração única e continuada – Orientações de 2006 para o cálculo das coimas.

Acórdão do Tribunal Geral de 12 de julho de 2019, proferido no âmbito do Processo T-763/15; ECLI:EU:T:2019:517

Partes: Sony Optiarc, Inc e o/Comissão

Descritores: Concorrência – Acordos, decisões e práticas concertadas – Mercado dos leitores de discos óticos – Decisão que declara uma infração aos artigos 101.º do TFUE e 53.º do Acordo EEE – Acordos de colusão que tinham por objeto procedimentos concursais relativos a leitores de discos óticos para computadores portáteis e computadores de secretária – Infração por objeto - Direitos de defesa – Dever de fundamentação - Princípio da boa administração – Coimas – Infração única e continuada – Orientações de 2006 para o cálculo das coimas.

Acórdão do Tribunal Geral de 12 de julho de 2019, proferido no âmbito do Processo T-762/15; ECLI:EU:T:2019:515

Partes: Sony Corporation e o./Comissão

Descritores: Concorrência – Acordos, decisões e práticas concertadas – Mercado dos leitores de discos óticos – Decisão que declara uma infração aos artigos 101.º do TFUE e 53.º do Acordo EEE – Acordos de que tinham por objeto procedimentos concursais relativos a leitores de discos óticos para computadores portáteis e computadores de secretária – Infração por objeto – Direitos de defesa – Dever de fundamentação – Princípio da boa administração – Coimas – Infração única e continuada – Orientações de 2006 para o cálculo das coimas.

Acórdão do Tribunal Geral de 11 de julho de 2019, proferido no âmbito do Processo T-582/15; ECLI:EU:T:2019:497

Partes: Silver Plastics GmbH & Co. KG e o./Comissão

Descritores: Concorrência – Acordos, decisões e práticas concertadas - Mercado das embalagens para alimentos para venda a retalho – Decisão que declara uma infração ao artigo 101.º do TFUE – Prova da participação no cartel – Infração única e continuada – Princípio da igualdade de armas –Direito a interrogar testemunhas ouvidas pela Comissão – Comunicação relativa à imunidade em matéria de coimas e à redução do seu montante de 2006 –Valor acrescentado significativo – Imputabilidade pela infração - Orientações de 2006 para o cálculo das coimas – Igualdade de tratamento – Limite da coima.

Acórdão do Tribunal Geral de 11 de julho de 2019, proferido no âmbito do Processo T-530/15; ECLI:EU:T:2019:498

Partes: Huhtamäki Oyj e o./Comissão

Descritores: Concorrência – Acordos, decisões e práticas concertadas – Mercado das embalagens para alimentos para venda a retalho - Decisão que declara uma infração aos artigos 101.º TFUE e 53.º do Acordo EEE – Prova da participação no cartel – Infração única e continuada – Imputabilidade pela infração – Orientações de 2006 para o cálculo das coimas – Proporcionalidade – Igualdade de tratamento.

Acórdão do Tribunal Geral de 11 de julho de 2019, proferido no âmbito do Processo T-523/15; ECLI:EU:T:2019:499

Partes: Italmobiliare SpA e o./Comissão

Descritores: Concorrência – Acordos, decisões e práticas concertadas – Mercado das embalagens para alimentos para venda a retalho – Decisão que declara uma infração ao artigo 101.º TFUE – Imputabilidade pela infração – Condições para a concessão do benefício da imunidade – Orientações de 2006 para o cálculo das coimas – Valor das vendas – Limite da coima – Duração do procedimento administrativo – Duração razoável – Capacidade contributiva.

Acórdão do Tribunal Geral de 11 de julho de 2019, proferido no âmbito do Processo T-522/15; ECLI:EU:T:2019:500

Partes: CCPL – Consorzio Cooperative di Produzione e Lavoro SC e o./Comissão

Descritores: Concorrência – Acordos, decisões e práticas concertadas – Mercado das embalagens para alimentos para venda a retalho - Decisão que declara uma infração ao artigo 101.º TFUE – Imputabilidade pela infração – Orientações de 2006 para o cálculo das coimas – Valor das vendas – Limite da coima – Proporcionalidade – Igualdade de tratamento – Capacidade contributiva.

Acórdão do Tribunal de Justiça de 10 de julho de 2019, proferido no âmbito do Processo C-39/18 P; ECLI:EU:C:2019:584

Partes: Comissão/Icap e o.

Descritores: Recurso de decisão do Tribunal Geral – Concorrência – Acordos, decisões e práticas concertadas – Setor dos produtos derivados de taxas de juro expressas em ienes japoneses – Decisão que declara uma infração

aos artigos 101.º TFUE e 53.º do Acordo EEE – Responsabilidade do facilitador do acordo – Cálculo da coima – Dever de fundamentação.

Auxílios de Estado

Acórdão do Tribunal Geral de 24 de setembro de 2019, proferido no âmbito do Processo T-760/15; ECLI:EU:T:2019:669

Partes: Países Baixos/Comissão

Descritores: Auxílios de Estado – Auxílio implementado pelos Países Baixos – Decisão que declara o auxílio incompatível com o mercado interno e ilegal e ordena a sua recuperação – Decisão da autoridade fiscal (*tax ruling*) – Preço de transferência – Cálculo da base do imposto – Princípio da concorrência plena – Vantagem – Sistema de referência – Autonomia fiscal e processual dos Estados-Membros.

Acórdão do Tribunal Geral de 24 de setembro de 2019, proferido no âmbito do Processo T-755/15; ECLI:EU:T:2019:670

Partes: Luxemburgo/Comissão

Descritores: Auxílios de Estado – Auxílio implementado pelo Luxemburgo – Decisão que declara o auxílio incompatível com o mercado interno e ilegal e ordena a sua recuperação – Decisão da autoridade fiscal (*tax ruling*) – Vantagem – Princípio da concorrência plena – Caráter seletivo – Presunção – Restrição da concorrência – Recuperação.

Acórdão do Tribunal Geral de 24 de setembro de 2019, proferido no âmbito do Processo T-121/15; ECLI:EU:T:2019:684

Partes: Fortischem a.s./Comissão

Descritores: Auxílios de Estado – Industria química – Decisão que declara o auxílio incompatível com o mercado interno – Conceito de auxílio de Estado – Fundos do Estado – Vantagem – Recuperação – Continuidade económica – Principio da boa administração – Dever de fundamentação.

Acórdão do Tribunal Geral de 20 de setembro de 2019, proferido no âmbito do Processo T-696/17; ECLI:EU:T:2019:652

Partes: Havenbedrijf Antwerpen NV e o./Comissão

Descritores: Auxílios de Estado – Regime de isenção do imposto sobre as sociedades aplicado pela Bélgica a favor dos seus portos – Decisão que

declara o regime de auxílios incompatível com o mercado interno – Conceito de atividade económica – Serviços de interesse económico geral – Atividades não económicas – Caráter dissociável – Caráter seletivo – Pedido de período transitório.

Acórdão do Tribunal Geral de 20 de setembro de 2019, proferido no âmbito do Processo T-674/17; ECLI:EU:T:2019:651

Partes: Le Port de Bruxelles e Région de Bruxelles-Capitale/Comissão

Descritores: Auxílios de Estado – Regime de isenção do imposto sobre as sociedades aplicado pela Bélgica a favor dos seus portos – Decisão que declara o regime de auxílios incompatível com o mercado interno – Conceito de atividade económica – Serviços de interesse económico geral – Atividades não económicas – Caráter dissociável – Caráter seletivo – Artigo 93.º do TFUE e artigo 106.º n.º 2, do TFUE.

Acórdão do Tribunal Geral de 20 de setembro de 2019, proferido no âmbito do Processo T-673/17; ECLI:EU:T:2019:643

Partes: Port autonome du Centre e de l'Ouest e o./Comissão

Descritores: Auxílios de Estado – Regime de isenção do imposto sobre as sociedades aplicado pela Bélgica a favor dos seus portos – Decisão que declara o regime de auxílios incompatível com o mercado interno – Conceito de atividade económica – Serviços de interesse económico geral – Atividades não económicas – Caráter dissociável – Caráter seletivo – Artigo 93.º do TFUE e artigo 106.º, n.º 2, do TFUE.

Acórdão do Tribunal Geral de 20 de setembro de 2019, proferido no âmbito do Processo T-217/17; ECLI:EU:T:2019:633

Partes: FVE Holýšov I s. r. o./Comissão

Descritores: Auxílios de Estado – Mercado da eletricidade produzida a partir de fontes de energia renováveis – Medidas fixando um preço mínimo de compra da eletricidade produzida a partir de fontes renováveis ou atribuindo um prémio aos produtores dessa eletricidade – Modificação das medidas iniciais – Decisão que declara o regime do auxílio compatível com o mercado interno no termo da fase preliminar de análise – Artigo 107.º, n.º 3, alínea c), do TFUE – Beneficiários do auxílio e acionistas dos beneficiários – Confiança legitima – Recursos do Estado – Competência da Comissão para examinar a compatibilidade das medidas com outras disposições do direito da União para além das relativas aos auxílios de Estado.

Acórdão do Tribunal Geral de 19 de setembro de 2019, proferido no âmbito do Processo T-386/14 RENV; ECLI:EU:T:2019:623

Partes: FIH Holding A/S e o./Comissão

Descritores: Auxílio de Estado – Sector bancário – Auxílio concedido à FIH sob a forma da transferência dos seus ativos depreciados para uma nova filial e da subsequente compra dos mesmos por um organismo com a função de garantir a estabilidade financeira – Auxílio aos bancos em período de crise – Decisão que declara o auxílio compatível com o mercado interno – Admissibilidade – Cálculo do montante do auxílio – Erro manifesto de apreciação.

Acórdão do Tribunal Geral de 17 de setembro de 2019, proferido no âmbito dos Processos T-129/07 e T-130/07; ECLI:EU:T:2019:610

Partes: Irlanda e o./Comissão

Descritores: Auxílios estatais – Diretiva 2003/96 / CE – Impostos especiais de consumo sobre óleos minerais – Óleos minerais utilizados como combustível na produção de alumina – Isenção de imposto especial de consumo – Natureza seletiva da medida – Orientações sobre auxílios estatais à proteção do ambiente de 2001.

Acórdão do Tribunal Geral de 17 de setembro de 2019, proferido no âmbito dos Processos T-119/07 e T-207/07; ECLI:EU:T:2019:613

Partes: Itália e o./Comissão

Descritores: Auxílios estatais – Diretiva 2003/96/CE – Impostos especiais de consumo sobre óleos minerais – Óleos minerais utilizados como combustível na produção de alumina – Isenção de imposto especial de consumo – Natureza seletiva da medida - Orientações comunitárias sobre auxílios estatais com finalidade regional à proteção do ambiente de 2001 – Orientações sobre auxílios estatais à proteção do ambiente de 2001 – Confiança legítima – Presunção de legalidade dos atos das instituições – Princípio da boa administração – Dever de fundamentação – Contradição de motivos.

Acórdão do Tribunal Geral de 12 de setembro de 2019, proferido no âmbito do Processo T-417/16; ECLI:EU:T:2019:597

Partes: Achemos Grupė e o./Comissão

Descritores: Auxílios estatais – Auxílio à Klaipėdos Nafta para a construção e gestão de um terminal de gás natural liquefeito no porto marítimo de Klaipėda – Decisão que declara o auxílio compatível com o mercado

interno – Artigo 106.º, n.º 2, do TFUE – Artigo 107.º, n.º 3, alínea c), do TFUE – Decisão de não colocar objeções – Segurança no aprovisionamento – Serviço de interesse económico geral.

Acórdão do Tribunal de Justiça de 29 de julho de 2019, proferido no âmbito do Processo C-659/17; ECLI:EU:C:2019:633

Partes: Istituto nazionale della previdenza sociale (INPS)/ Azienda Napoletana Mobilità SpA

Descritores: Reenvio prejudicial – Auxílios de Estado – Auxílios ao emprego – Isenção de encargos sociais ligados a contratos de formação e trabalho – Decisão 2000/128/CE – Regimes de auxílios que contêm medidas a favor do emprego – Auxílios em parte incompatíveis com o mercado interno – Aplicabilidade da decisão 2000/128/CE a uma empresa que presta serviços de transporte público local adjudicados por um município – Artigo 107.º, n.º 1, do TFUE – Conceito de "distorção da concorrência" – Conceito de efeitos no comércio entre Estados-Membros.

Acórdão do Tribunal de Justiça de 29 de julho de 2019, proferido no âmbito do Processo C-654/17 P; ECLI:EU:C:2019:634

Partes: Bayerische Motoren Werke AG/ Comissão

Descritores: Recurso de decisão do Tribunal Geral – Auxílios de Estado – Auxílios regionais ao investimento – Auxílio para um grande projeto de investimento – Auxílio parcialmente incompatível com o mercado interno – Artigo 107.º, n.º 3, do TFUE – Necessidade de auxílio – Artigo 108.º, n.º 3, do TFUE – Regulamento (CE) n.º 800/2008 – Auxílio que ultrapassa o limiar de notificação individual – Notificação – Alcance da isenção por categoria – Recurso subordinado – Admissão de uma intervenção perante o Tribunal Geral – Admissibilidade.

Acórdão do Tribunal Geral de 12 de julho de 2019, proferido no âmbito do Processo T-738/17; ECLI:EU:T:2019:526

Partes: Syndicat Transport Île de France (STIF-IDF) /Comissão

Descritores: Auxílios de Estado – Regime dos auxílios ilegalmente executados pela França entre 1994 e 2008 – Subvenções ao investimento concedidas pelo STIF-IDF – Decisão que declara o regime dos auxílios compatível com o mercado interno – Vantagem – Compensação pelos custos inerentes à execução de obrigações de serviço público – Artigo 107.º, n.º 1, do TFUE – Dever de fundamentação.

Acórdão do Tribunal Geral de 12 de julho de 2019, proferido no âmbito do Processo T-330/17; ECLI:EU:T:2019:527

Partes: Ceobus /Comissão

Descritores: Auxílios de Estado – Regime dos auxílios ilegalmente executados pela França entre 1994 e 2008 – Subvenções ao investimento concedidas pela Região da Ilha de França – Decisão que declara o regime dos auxílios compatível com o mercado interno – Conceitos de "auxílio existente" e de "novo auxílio" – Artigo 107.º do TFUE – Artigo 108.º do TFUE – Artigo 1, alínea b), subalíneas i) e v), do Regulamento (UE) n.º 2015/1589 – Prazo de prescrição – Artigo 17.º do Regulamento n.º 2015/1589.

Acórdão do Tribunal Geral de 12 de julho de 2019, proferido no âmbito do Processo T-309/17; ECLI:EU:T:2019:529

Partes: Organisation professionnelle des transports d'Île de France (Optile)/Comissão

Descritores: Auxílios de Estado – Regime dos auxílios ilegalmente executados pela França entre 1994 e 2008 – Subvenções ao investimento concedidas pela Região da Ilha de França – Decisão que declara o regime dos auxílios compatível com o mercado interno – Conceitos de "auxílio existente" e de "novo auxílio" – Artigo 107.º do TFUE –Artigo 108.º do TFUE – Artigo 1, alínea b), subalíneas i) e v), do Regulamento (UE) n.º 2015/1589 – Prazo de prescrição – Artigo 17.º do Regulamento n.º 2015/1589.

Acórdão do Tribunal Geral de 12 de julho de 2019, proferido no âmbito do Processo T-292/17; ECLI:EU:T:2019:532

Partes: Région Île-de-France (França)/Comissão

Descritores: Auxílios de Estado – Regime dos auxílios ilegalmente executados pela França entre 1994 e 2008 – Subvenções ao investimento concedidas pela Região da Ilha de França – Decisão que declara o regime dos auxílios compatível com o mercado interno – Vantagem – Carácter seletivo – Artigo 107.º TFUE – Dever de fundamentação – Conceitos de "auxílio existente" e de "novo auxílio" – Artigo 108.º do TFUE – Artigo 1.º, alínea b), subalíneas i) e v), do Regulamento (UE) n.º 2015/1589.

Acórdão do Tribunal Geral de 12 de julho de 2019, proferido no âmbito do Processo T-291/17; ECLI:EU:T:2019:534

Partes: Transdev e o./Comissão

Descritores: Auxílios de Estado – Regime dos auxílios ilegalmente executados pela França entre 1994 e 2008 – Subvenções ao investimento concedidas pela Região da Ilha de França – Decisão que declara o regime dos auxílios compatível com o mercado interno – Conceitos de "auxílio existente" e de "novo auxílio" – Artigo 107.º do TFUE – Artigo 108.º do TFUE – Artigo 1.º, alínea b), subalíneas i) e v), do Regulamento (UE) n.º 2015/1589 – Prazo de prescrição – Artigo 17.º do Regulamento n.º 2015/1589 – Dever de fundamentação.

Acórdão do Tribunal Geral de 12 de julho de 2019, proferido no âmbito do Processo T-289/17; ECLI:EU:T:2019:537

Partes: Keolis CIF/Comissão

Descritores: Auxílios de Estado – Regime dos auxílios ilegalmente executados pela França entre 1994 e 2008 – Subvenções ao investimento concedidas pela Região da Ilha de França – Decisão que declara o regime dos auxílios compatível com o mercado interno – Conceitos de "auxílio existente" e de "novo auxílio" – Artigo 107.º do TFUE – Artigo 108.º do TFUE – Artigo 1.º, alínea b), subalíneas i) e v), do Regulamento (UE) n.º 2015/1589 – Prazo de prescrição – Artigo 17.º do Regulamento n.º 2015/1589.

Acórdão do Tribunal Geral de 11 de julho de 2019, proferido no âmbito do Processo T-894/16; ECLI:EU:T:2019:508

Partes: Société Air France /Comissão

Descritores: Recurso de anulação – Auxílios de Estado – Medidas concedidas pela França ao aeroporto de Marselha-Provença e às companhias aéreas que utilizam esse aeroporto – Decisão que declara o auxílio compatível com o mercado interno – Subvenções ao investimento – Diferenciação das taxas aeroportuárias aplicáveis aos voos nacionais e aos voos internacionais – Reduções das taxas aeroportuárias para incentivar a realização de voos a partir da nova aerogare Marselha Provença 2 – Recorrente não individualmente afetado – Posição concorrencial não substancialmente afetada – Inadmissibilidade.

NOTAS CURRICULARES

JOÃO GATA

João Eduardo C. L. Gata é Licenciado em Economia pela Universidade Católica Portuguesa em Lisboa, Doutorado em Economia pela Universidade de Minnesota/EUA, onde também fez estudos de Pós-Graduação em Matemática e em Ciência de Computadores e tem um Diploma de Pós-Graduação (1 ano) em Direito da Concorrência na União Europeia pelo King's College da Universidade de Londres. É desde outubro de 2015 Assessor Principal do Conselho da Autoridade da Concorrência (AdC). Foi Diretor do Gabinete de Estudos Económicos e Acompanhamento de Mercados da AdC entre agosto de 2008 e junho de 2014, e Economista-Chefe da AdC entre setembro de 2007 e outubro de 2015. Entre 2004 e 2006 trabalhou como economista sénior no Departamento de Controlo de Concentrações de Empresas da AdC. Entre 2006 e 2007 foi Diretor-Geral do DPP do Ministério do Ambiente do XVII Governo Constitucional. É Professor de Economia da Universidade de Aveiro em Portugal desde 2001, estando desde 2004 em Regime de Comissão de Serviço na AdC. Antes de 2001, foi Professor de Economia no Instituto Superior de Gestão em Lisboa, *Lecturer* em Economia na Universidade de York no Reino Unido, e *Teaching Assistant* e *Teaching Associate* em Economia na Universidade de Minnesota nos EUA.

João Eduardo C. L. Gata has a University Degree in Economics from the Catholic University in Lisbon, a Doctorate in Economics from the University of Minnesota/USA, where he also did graduate studies in Mathematics and Computer Science, and a Postgraduate Diploma (1 year) in EU Competition Law by King's College of the University of London. He has been Principal Advisor to the Competition Authority (AdC) Board since October 2015. Prior to 2015, he was Director of the AdC's Bureau of Economic Studies and Market Monitoring, and AdC's Chief Economist for several years. From 2004 to 2006 he worked as a senior economist in the AdC's Department of Mergers and Acquisitions. Between 2006 and 2007 he was Director General of DPP at the XVII Constitutional Government's Ministry for Environment Affairs. He is Professor of Economics at the University of Aveiro in Portugal since 2001. Before 2001 he was a Professor of Economics at the Instituto Superior de Gestão in Lisbon, Lecturer in Economics at

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JOSÉ LUIS RODRÍGUEZ
Assessor na Unidade de Estudos de Mercado da Comissão Nacional de Mercados e Concorrência Espanhola (CNMC), desde novembro de 2015, onde participou em análises do setor elétrico, comércio internacional e concorrência, do setor financeiro e do sistema de portos. É licenciado em Economia pela Universidade de Valladolid (Espanha).

Advisor in the Unit of Market Studies in the Spanish National Commission on Markets and Competition (CNMC), from November 2015, where he has taken part in analyses of the electricity sector, international trade and competition, the financial sector and the port system. José Luis Rodríguez holds a degree in Economics from University of Valladolid (Spain).

LARA TOBÍAS PEÑA
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Head of the Market Studies Unit in the Spanish National Commission on Markets and Competition (CNMC), from October 2018. Lara Tobías Peña joined the Unit in August 2015, specializing in urban services and air transport. Before joining the CNMC, she worked at the Strategic Analysis and International Financial System Unit, Ministry of Economy and Competitiveness.

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Responsável pela Área de Prática de Europeu e Concorrência e Consultora na Campos Ferreira, Sá Carneiro & Associados. Entre 2013 e 2015 desempenhou as funções de Diretora do Departamento de Controlo das Concentrações da Autoridade da Concorrência. Entre 2011 e 2013 foi Adjunta do Secretário de Estado Adjunto do Primeiro Ministro (na ESAME – Estrutura de Acompanhamento dos Memorandos celebrados ao abrigo do

Programa de Assistência Económica e Financeira do FMI/CE/BCE), do XIX Governo Português. Neste contexto e enquanto especialista em Europeu e Concorrência, acompanhou a implementação de medidas legislativas que incluíram a adoção de um novo regime jurídico da concorrência, a aprovação de uma lei-quadro sobre o funcionamento de entidades administrativas independentes, a transposição das diretivas setoriais respeitantes à energia, telecomunicações e transportes. Em 2000 frequentou um estágio na Unidade B2 da *Task Force* das Concentrações, na Direção Geral da Concorrência da Comissão Europeia. Licenciada pela Faculdade de Direito da Universidade de Lisboa e detentora de um LL.M em Direito da União Europeia no Colégio da Europa, Bruges, Bélgica. Co-autora do livro "O procedimento de controlo das operações de concentração de empresas em Portugal – A prática decisória da Autoridade da Concorrência à luz da Lei n.º 18/2003", Almedina, 2009 e autora de inúmeros artigos doutrinais sobre Direito da União Europeia e Direito da Concorrência. Secretária-Geral do CAPDC - Círculo dos Advogados Portugueses de Direito da Concorrência e da APDE - Associação Portuguesa de Direito Europeu. Editora da área de Controlo das Concentrações da C&R - Revista de Concorrência e Regulação, Edição conjunta da Autoridade da Concorrência e do IDEFF (Faculdade de Direito da Universidade de Lisboa).

Head of the EU and Competition Area of Practice and Counsel of Campos Ferreira, Sá Carneiro & Associados. Between 2013 and 2015 was Director of the Merger Department at the Portuguese Competition Authority. Between 2011 and 2013 was Deputy to the Secretary of State to the Prime Minister (in ESAME - technical team in charge of the coordination and implementation of the international assistance program of the IMF/EC/ECB), of the XIX Portuguese Government). In this context and as specialist in EU and Competition, participated in the implementation of legislative measures which included the adoption of the new competition act, the approval of a framework law on the functioning of independente administrative entities, the transposition of sector specific directives such as the ones concerning energy, telecoms and transports, amongst other. In 2000 was trainee in the Merger Task Force (Unit B2) of Directorate General for Competition of the European Commission. Law Degree, Law School, Lisbon University and LL.M in European Union Law at the College of Europe, Bruges, Belgium. Co-author of "The Portuguese merger control regime - The Competition Authority's decisional practice under Law nr. 18/2003", Almedina, 2009 and author of several articles on EU and Competition law. Secretary-General of CAPDC - Association of Portuguese Competition Lawyers ("Círculo dos Advogados Portugueses

de Direito da Concorrência") and of APDE – Portuguese Association of European Law (Associação Portuguesa de Direito Europeu). Editor in the area of Mergers of C&R – Revista de Concorrência e Regulação (Competition and Regulation Magazine), a joint initiative of the Competition Authority and IDEFF (Law Lisbon of the Lisbon University).

MARTA BORGES CAMPOS

Licenciada em Direito pela Faculdade de Direito da Universidade de Coimbra (2001) e pós-graduada em Law Enforcement, Compliance e Direito Penal, pela Faculdade de Direito da Universidade de Lisboa (2016). Frequenta atualmente o Mestrado em Direito e Ciência Jurídica na Faculdade de Direito da Universidade de Lisboa e é Juíza no Tribunal da Concorrência, Regulação e Supervisão.

LL.B., Law School, University of Coimbra (2001) and postgraduate degree in Law Enforcement, Compliance and Criminal Law, University of Lisbon Law School (2016). Currently attends the Master in Law and Legal Science at the Faculty of Law of the University of Lisbon and is Judge at the Competition, Regulation and Supervision Court.

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Advogado. Licenciado em Direito pela Universidade de Lisboa (2000). Membro do Conselho de Administração da Autoridade da Concorrência Portuguesa (setembro 2013-julho 2019). Diretor Jurídico da Sagestamo, empresa pública com atividade na aquisição, gestão e venda de ativos imobiliários (2008-2013). Advogado na sociedade de advogados Uría Menéndez, escritórios de Lisboa e Madrid (2002-2008). Advogado-Estagiário na sociedade de advogados José Maria Calheiros & Associados, em Lisboa (2000-2002).

Portuguese lawyer (Advogado). Graduated Law in 2000 from the University of Lisbon Law School. Member of the Board of the Portuguese Competition Authority (AdC) from September 2013 to July 2019. From 2008 to 2013, Head Legal Counsel at Sagestamo, a group of state-owned companies with activity in the purchase, management, modification and sale of real estate assets. From 2002 to 2008, practised law at the firm of Uría Menéndez in Lisbon and Madrid, which he entered upon concluding his mandatory internship at the law offices of José Maria Calheiros & Associados, in Lisbon (2000-2002).

PEDRO HINOJO

Assessor na Unidade de Estudos de Mercados da Comissão Nacional de Mercados e Concorrência Espanhola (CNMC), desde novembro de 2015, especializado em plataformas digitais, "sharing economy", transporte, turismo e setor financeiro. Entre maio de 2014 e novembro de 2015, trabalhou também em "Advocacy" de concorrência na CNMC, na Unidade de Auxílios de Estado e Relatórios de Projetos de Lei, especializando-se em telecomunicações, setor financeiro, avaliação de auxílios de Estado, neutralidade concorrencial e em geral na cultura de "compliance" com o direito da concorrência. Anteriormente (de outubro de 2006 a abril de 2014), deteve várias posições no setor público relacionadas com política económica e análise económica. É licenciado em Economia pela Universidade de Alcalá, em Espanha. Tem várias publicações relacionadas com Regulação e direito da concorrência na área das plataformas digitais, "sharing economy", transporte, turismo e setor financeiro.

Advisor in the Unit of Market Studies in the Spanish National Commission on Markets and Competition (CNMC), from November 2015, specialized on digital platforms, sharing economy, transport, tourism and the financial sector. Between May 2014 and November 2015, he was also working on Competition Advocacy in CNMC, in the Unit of State Aid and Draft Law Reports, focusing on telecommunications, financial sector, State Aid evaluation, competitive neutrality and the general culture of compliance with competition law. Previously (from October 2006 to April 2014), he has held different positions in the public sector related to economic policy and economic analysis. Pedro Hinojo holds an undergraduate degree in Economics from University of Salamanca, in Spain, and a Master in Economic Analysis from University of Alcalá, in Spain. He has several publications related to regulation and competition law in the areas of digital platforms, sharing economy, transport, tourism and the financial sector.

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de Defesa Econômica (Cade) (2014-2016). Auditora de Finanças e Controle da Secretaria do Tesouro Nacional desde 2007.

BA in International Relations, Ms in Economics and PhD in Economics from the University of Brasilia. Postdoctoral Fellow at Toulouse School of Economics (2016-2017). 15 years of experience in the Brazilian federal government: Technical advisor at the Coordination of International Competitiveness of the Secretariat of Economic Monitoring at the Ministry of Finance (2005-2010); Deputy coordinator of macroeconomic analysis of the Secretariat of Economic Policy at the Ministry of Finance (2011-2013); Deputy chief-economist of the Brazilian Competition Authority (Cade) (2014-2016). Financial auditor of the National Treasury since 2007.

TÂNIA LUÍSA FARIA

Licenciada e Mestre em Direito pela Faculdade de Direito da Universidade de Lisboa (2004:2012). Assistente Convidada da Faculdade de Direito da Universidade de Lisboa. Associada Coordenadora da área de prática de Direito da União Europeia e da Concorrência da Uría Menéndez - Proença de Carvalho. Membro do Círculo dos Advogados Portugueses de Direito da Concorrência.

Tânia Luísa Faria is graduated in Law and holds a Master's degree in Law from the University of Lisbon Law School (2004:2012). Guest lecturer at the University of Lisbon Law School. Managing Associate at the EU Law and Competition department of the law firm Uría Menéndez - Proença de Carvalho. Member of the Portuguese Competition Lawyers Association.

THOMAS HOEHN

Economista experiente orientado para investigação em Economia aplicada, consultoria de negócios, regulação e políticas públicas. Dedicou a sua Carreira a analisar mercados e concorrência e deteve várias posições-sénior e de assessoria com várias consultoras internacionais. Atuou repetidamente como "Monitoring Trustee" para a Comissão Europeia e foi o Diretor Fundador da CompetitionRX, uma empresa que se dedica a "compliance" com obrigações e serviços de monitorização no âmbito do direito europeu da concorrência, controlo de concentrações e auxílios de Estado. Anteriormente, foi Sócio na PricewaterhouseCoopers em Londres e liderou a sua prática de Economia, primeiro a nível europeu, e depois mundial. Desde novembro de 2017, é consultor associado da NERA Economic Consultants em questões económicas no âmbito de investigações e contencioso de concorrência. Foi

Professor Convidado na Imperial College Business School de 2003 a 2009 e Diretor do Centro de Investigação de Propriedade Intelectual do Imperial College até 2013. Deteve também posições enquanto docente e investigador na Universidade de Zurique e na London School of Economics. Atualmente, é Investigador Convidado na Universidade de Hamburgo.

Experienced economist with a background in applied economic research, business consulting, regulation and public policy. Tom has spent his career analysing markets and competition and has held senior management and advisory positions with several major international consulting firms. He regularly act as a Monitoring Trustee for the European Commission and was the Founding Director of CompetitionRX, a company providing remedy compliance and monitoring services in EU antitrust, merger control and state aid. From 2009 to 2017 Tom was a Panel Member of the UK Competition and Markets Authority. Prior to that he was a Partner at PricewaterhouseCoopers in London and led its European, and later global economics practice. Since November 2017, Tom acts as an affiliated consultant with NERA Economic Consultants on economic issues arising in antitrust investigations and litigation. He was a Visiting Professor at Imperial College Business School 2003 – 2009 and Director of the Intellectual Property Research Centre at Imperial College until 2013. He previously held teaching and research positions at the University of Zurich and the London School of Economics. He currently is visiting researcher at the University of Hamburg.

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Nemo tenetur se ipsum accusare

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5	Heloísa Oliveira	*Eficácia e adequação na tutela sancionatória de bens ambientais*
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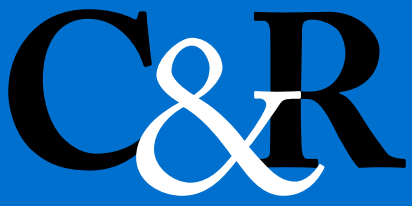
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