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Blockchain: Mind the gap! Lessons learnt from the net neutrality debate and competition law related aspects

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ABSTRACT

Blockchain is one of the breakthrough technologies of our times and has already started to penetrate into various industries across the globe. Given the growing recent interest in big data, algorithms as well as net neutrality, it is conceivable that blockchain technology might attract competition law authorities' attention in the near future. The potential areas of antitrust scrutiny range between information exchange, access to blockchain networks and paid prioritisation. The authors of this article argue for an ex post competition law scrutiny rather than ex ante regulation.

Blockchain est l'une des technologies les plus révolutionnaires de notre époque et a déjà commencé à pénétrer dans diverses industries à travers le monde. Compte tenu de l'intérêt récent sur les big data, les algorithmes et la neutralité du Net, il est concevable que la technologie de blockchain puisse attirer l'attention des autorités de la concurrence dans un avenir proche. Les questions pertinentes au droit de la concurrence portent sur l'échange d'informations, l'accès aux réseaux de blockchain et la priorisation payante. Les auteurs de cet article plaident en faveur d'un examen ex post du droit de la concurrence plutôt que d'un examen ex ante.

1. Not only since the price for Bitcoin reached unexpected heights at the end of 2017, the blockchain technology triggers more and more public attention. The disruptive nature of this decentralised, secure and powerful technology, which can replace central counterparties, makes blockchain highly attractive for various purposes throughout different industries. At the same time, its potential significant importance for business in the future will undoubtedly also trigger the attention of regulators. While to date mainly financial supervisory authorities¹ have become vocal about blockchain, this article argues that in the future competition law authorities will also play a major role in enforcement action concerning blockchain.

2. After a short introduction into the blockchain technology this article will set out three potential areas of antitrust scrutiny in this field: information exchange, access questions and paid prioritisation. We will conclude with an outlook whether regulatory or competition law authorities are better placed to deal with these aspects.

I. Introduction to blockchain

3. Blockchain is one of the breakthrough technologies of our times and is predicted to have a significant impact on market structure especially in the technological sector. However, many are not yet familiar with the concept. Blockchain is a distributed ledger technology,² where all transactions within that ledger are recorded in real time and are accessible to everyone within that network. All information on the transactions performed is saved on the ledger and made available to all network participants through a distinct copy which is continuously updated. One could think of the blockchain technology as being

¹ See for instance: The European Securities and Markets Authority ("ESMA") highlights ICO risks for investors and firms, available here: <https://www.esma.europa.eu/press-news/esma-news/esma-highlights-ico-risks-investors-and-firms> (last accessed on 15 December 2017).

² The terms "blockchain" and "distributed ledger" are used interchangeably in this article.

similar to online collaboration platforms, where multiple users work simultaneously on the same document while it is constantly updated. Every new transaction corresponds to a new block of data added to the blockchain, which has to be approved by existing network participants with strong computing power (so-called “miners”). This clearance of transactions is based on sophisticated algorithmic formulas.

4. Blockchain technology quickly grew very popular mainly due to two significant advantages—namely, the elimination of the need for intermediaries to a transaction and increased transaction security.

5. This decentralised model of data storage, being altered on a shared basis with identical copies available to each user, avoids hacking threats linked to the typical centralised system. As the society and economy evolve, this technological concept can prove very useful for various industries but also public administration purposes. The most publicly debated application of the blockchain technology to date is the Bitcoin cryptocurrency.³ Satoshi Nakamoto in a paper published in 2008 introduced Bitcoin as “[a] purely peer-to-peer version of electronic cash [that] would allow online payments to be sent directly from one party to another without going through a financial institution.”⁴

6. While Bitcoin is limited to currency transactions, the potential use of blockchain is much wider. Lately blockchain has been actively used within the concept of smart contracts, which allow for significantly more complex transactions. Through smart contracts the developers can tailor them to all sorts of needs. For instance, smart contracts can be used as a basis for claiming compensation based on an insurance agreement, transfer of real estate or even for stock exchange clearances or managing domain names. In sum, blockchain is an intelligent, cost-efficient and secure technology which has already penetrated the market and is becoming more and more popular.

II. The interplay between blockchain technology and competition law

7. As will be demonstrated below, different aspects of the blockchain technology may give rise to competition law issues. These concerns are relevant to both Articles 101 and 102 of the Treaty on the Functioning of the European Union (“TFEU”). In broad, they can be structured in two sets; one that reads on the well-known concepts of information exchange and refusal to access, and one that emerges as part of the net neutrality debate and in particular that of paid prioritisation. At this point it is worth recalling that competition law provisions apply to undertakings. Blockchain is a technology not an undertaking, as defined by the European courts.⁵ Thus the considerations outlined below relate to the participants of a blockchain network insofar as these are undertakings.

8. Although one could think that these concerns are somewhat premature, this is certainly not the case. To date, blockchain has not been an enforcement priority of the competition law authorities and it is hard to ascertain the quality of evidence that would be required to prove a distortion of the competitive structure in the market and consumer harm. From a competition law perspective, the blockchain landscape of today is analogous to that of search engines, e-commerce platforms and algorithms in the 1990s. Ten years ago no one thought that competition law authorities would focus their enforcement priorities on these applications, triggering investigations and, in certain cases, hefty fines.

9. Besides the possibility of attracting *ex post* competition law attention as a means of dealing with classic competition law issues, such as information exchange, blockchain might also attract the imposition of *ex ante* regulation. This could be the case, for example, in the event that blockchain is used to support regulated activities, such as transferring of funds or clearing of securities within the financial sector. It is thus important that the members of a blockchain network gets its governance issues right from the very beginning to avoid cumbersome regulation and competition law procedures.

10. While blockchain as any technology could face scrutiny for various types of conduct, three aspects appear to be particularly relevant at this stage: information exchange, access questions and paid prioritisation.

3 European Union Agency for Network and Information Security (“ENISA”), Blockchain; available here: <https://www.enisa.europa.eu/topics/csirts-in-europe/glossary/blockchain> (last accessed on 4 December 2017).

4 S. Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System; available here: <https://bitcoin.org/bitcoin.pdf> (last accessed on 15 December 2017).

5 Case C-41/90 *Klaus Höfner and Fritz Elser v. Macrotron GmbH*, ECLI:EU:C:1991:161, para. 21.

III. Information exchange in the blockchain network

11. As explained in the introduction, blockchain technology applications are not limited to cryptocurrency transactions. This technology provides a platform that is suitable for various purposes, offering real time recording of actions in chronological order, accessible to every user. What is of significant importance in this regard is that there is affirmative consensus among the users that this information will be shared among them. Hence, if this shared information is competitively sensitive relating to strategic data,⁶ it is highly likely to be regarded as facilitating collusion. The case law of the EU courts on information exchange has traditionally imposed a low threshold on the European Commission to demonstrate collusion. Generally, if one undertaking is in possession of commercially sensitive information of another market participant, it is presumed that it will take this information into account when planning its own commercial behaviour.⁷ In addition, there is generally a high threshold for the rebuttal of these presumptions.

1. Horizontal information exchange

12. Information exchange through blockchain is probably blockchain's most attractive aspect for competition law enforcers. As a matter of fact, competitors who are part of the same blockchain network can exchange commercially sensitive information given that each of them keeps an identical record of all transactions within the distributed ledger. Presumably, information shared between competitors within a blockchain network entails a dual risk for initiation of competition law proceedings. That is due to the severity of an infringement based on the exchange of information coupled with the fact that such an exchange would materialise in a highly technological environment, with new technologies coming more and more under the Commission's scrutiny.

13. Similarly to most technology tools and platforms, blockchain operates essentially on the basis of algorithmic formulae. In the last year, the European Commission has consistently stressed its concerns about algorithms and competition issues that they could raise, thereby concretely increasing the risk of a competition law investigation. The Commission's alert regarding algorithms mainly relates to automated pricing through intelligent and self-learning algorithms. In blockchain language the concern could be the creation of a monitoring system for prices,

⁶ Communication from the Commission, Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements ("Guidelines on horizontal co-operation agreements"), 14/01/2011, OJ C 11/1, para. 86.

⁷ *Ibid.*, para. 62.

output or even innovative efforts which would be built based on blockchain algorithms or simply shared within a blockchain network.

14. In such a scenario, several issues might trigger a competition law authority's interest. In particular, it is sensible to assume that a company operating a software, platform or automated system would know how these actually work. In fact, it is not easy for an undertaking to escape liability by arguing ignorance of certain facts. By analogy, an undertaking will be held liable for illegal activity of its subsidiaries or its employees even if it was unaware of such activity.⁸ This is the case especially as regards blockchain given that this technology is built on the notion of consensus of sharing all information. The justification for distributing the data encoded in the network is to ensure system security, despite the inexistence of a central administration or storage hub. Thus, sharing commercially sensitive information on a blockchain network could trigger competition law proceedings.

15. A scenario in which members of a blockchain network encode genuinely public information⁹ or use this technology for other legitimate purposes, such as a registry of executed transactions, would likely be on the safe side. However, if at some point there are indications that the data shared no longer falls within that safe harbour, it would be the participant's responsibility to publicly distance himself in a firm and unambiguous way.¹⁰ The implementation of public distancing obviously would entail both technical and legal difficulties. In particular, given that blockchain technology is novel and fairly unshaped within the context of competition law it is difficult to predict how a competition law authority would apply existing concepts. Would it require the participant undertaking to abandon the blockchain once it realises the sensitive nature of the information stored on it, or would the mere fact of having joined the blockchain and therefore consented to the sharing of information be enough to prove concurrence of wills?

16. Recent speeches by EU competition law officials and most importantly by Competition Commissioner Vestager indicate the increasing focus of the Commission on competition law issues caused by algorithms and other big data applications. Indeed, if a blockchain network were used to camouflage anticompetitive practices, competition law authorities would use their existing investigation powers. In particular, Commissioner Vestager suggested in a speech delivered in March 2017

⁸ In parental liability cases the ultimate factor is decisive influence over the subsidiary, a concept that as such cannot be imported in blockchain networks. What can be imported, however, is the rationale behind it, which requires the undertaking to be aware of all its activities *lato sensu*.

⁹ Case C-89/85 *A. Ahlström Osakeyhtiö and others v. Commission of the European Communities*, EU:C:1993:120, para. 59–65; Case C-8/08 *T-Mobile Netherlands BV, KPN Mobile NV, Orange Nederland NV and Vodafone Libertel NV v. Raad van Bestuur van de Nederlandse Mededingingsautoriteit*, EU:C:2009:343, para. 36–39; Case T-587/08 *Fresh Del Monte Produce, Inc. v. European Commission*, EU:T:2013:129, para. 549.

¹⁰ Case T-377/06 *Comap SA v. European Commission*, EU:T:2011:108, para. 76; D. Bailey, "Publicly Distancing" Oneself from a Cartel, 2008, *World Competition* 31(2), Kluwer Law International.

that companies have a duty to design algorithms so that they comply with competition law.¹¹ A month later, Johannes Laitenberger, director-general for competition, reiterated this policy line stressing that “*To stay on the safe side of the law, it should have programmed the software to prevent collusion in the first place.*”¹²

17. The question of competition law enforcement regarding blockchain faces another complication due to the global scope of the technology. By definition, a computer network can span the world and the relevant conduct, such as uploading commercially sensitive information, can happen in different places of the world with effects in various jurisdictions. Once the first competition law authority decides to investigate a blockchain case, it will be highly relevant to think about global enforcement coordination both for the authorities and for those being investigated.

18. Another intriguing aspect of this new technology is the role and responsibility—if any—of the vendor or manager of a given distributed ledger network. In particular, it is conceivable that a company providing for the set-up of the blockchain network and responsible for its smooth functioning would be held liable as a cartel facilitator, constituting a modern *AC-Treuhand*¹³ case.

2. Vertical information exchange

19. As a general proposition, competition law enforcers have always been less sceptical towards vertical agreements as they are not concluded between competitors. There are, however, well-known concerns that can be raised relating to distribution systems or practices. Vertical agreements in the digital age have been at the top of the political agenda. Indeed, the EU’s Digital Single Market strategy and in particular the European Commission’s e-commerce sector inquiry have brought vertical agreements back to the spotlight.¹⁴ From a blockchain perspective, vertical relationships between parties participating in a blockchain could equally raise competition law concerns. That could be the case for instance where the network participants consist of the manufacturer and its dealers.

20. In such a scenario the blockchain network could be used to streamline multi-party processes, especially relating to monitoring of deliveries or payment executions. While these are legitimate uses of a blockchain network, at the same time it could be used as a means to monitor the dealers’ prices. And although the latter is not unlawful per se, it could be viewed as a relevant factor when assessing resale price maintenance, which is forbidden under competition law. Arguably, in such a case the Commission would assess whether the information provided is beyond what is admissible as a mere report from dealers to distributors.¹⁵

3. Information exchange within standardisation agreements

21. The ubiquity of the internet and all technologies built on its basis is unquestionable. In this highly connected era, interoperability and security are concerns widely spread across the industry and consumers. In this regard the setting of standards can prove essential. The European Commission in its Guidelines on horizontal co-operation agreements has recognised that “*standardisation agreements usually produce significant positive economic effects for example by promoting economic interpenetration on the internal market and encouraging the development of new and improved products or markets and improved supply conditions.*”¹⁶ The Commission is, however, also aware of the potential anticompetitive effects of such agreements.

22. As the industry becomes more familiar with the blockchain technology, its applications and the efficiencies it can deliver, it is likely that there will be industry agreements on technical standards built in a blockchain. For instance, this is predicted to be the case in the securities markets.¹⁷ Clearly these standard setting discussions will need to be compliant with competition law. It is plausible that during standard setting discussions, exchange of market information, presumably for the purpose of setting a standard, may diverge into anticompetitive contact between rivals.¹⁸

11 Speech by Competition Commissioner M. Vestager, Bundeskartellamt 18th Conference on Competition, “Algorithms and competition,” Berlin, 16 March 2017; available here: https://ec.europa.eu/commission/commissioners/2014-2019/vestager/announcements/bundeskartellamt-18th-conference-competition-berlin-16-march-2017_en (last accessed on 15 December 2017).

12 Speech by Director-General for Competition J. Laitenberger, Consumer and Competition Day, “Competition at the digital frontier,” Malta, 24 April 2017; available here: http://ec.europa.eu/competition/speeches/text/sp2017_06_en.pdf (last accessed on 15 December 2017).

13 Case C-194/14 P *AC-Treuhand AG v. European Commission*, EU:C:2015:717.

14 This perception is even more reinforced following the much-awaited Coty landmark judgment of the Court of Justice, which redefines distribution systems and online goods in the digital sector. See Case C-230/16 *Coty Germany v. Parfümerie Akzente* EU:C:2017:941.

15 Commission Decision of 16 February 1994 relating to a proceeding pursuant to Article 65 of the ECSC Treaty concerning agreements and concerted practices engaged in by European producers of beams (“*Steel beams*”), OJ 1994 L 11/61, para. 263–272, upheld on appeal to the General Court Case T-141/94 *Thyssen Stahl AG v. Commission of the European Communities* EU:T:1999:48, para. 385–412 and further upheld on appeal to the Court of Justice C-194/99, EU:C:2003:527.

16 Guidelines on horizontal co-operation agreements, para. 263.

17 ESMA, Report: The Distributed Ledger Technology Applied to Securities Markets, 7 February 2017, p. 4; available here: https://www.esma.europa.eu/sites/default/files/library/dlt_report_-_esma50-1121423017-285.pdf (last accessed on 15 December 2017).

18 Case C-7/95 P *John Deere Ltd v. Commission of the European Communities*, EU:C:1998:256, para. 88.

IV. Blockchain access issues

23. Despite all the widely known advantages of blockchain technology, its uses are still in an early stage of their development. However, as it increases in popularity an increasing number of market players and stakeholders are considering its implementation—including the European Commission itself.¹⁹ To accommodate these diversified needs, blockchain networks with specific functionalities and tools will be set up. While the market for blockchain services is still to be defined and market dynamics are unclear, it is possible that some networks may grow into a bottleneck position as this niche market becomes more mature. If such a network would be found to be a necessary or even sole provider of a certain application or service, and provided that a narrow market definition is adopted, Article 102 TFEU and all associated responsibilities and restrictions incumbent upon the dominant undertaking would come into play.

24. The typical issues that could be raised in such a scenario relate to pricing or other offering terms that could exclude smaller competitors or be used as a barrier to entry for new ones. Yet, in a “closed” blockchain network, the issue of refusal to access could well be brought up. As evidenced by a report issued by the European Securities and Markets Authority (“ESMA”), blockchains can be programmed to operate either as permission-based systems or as permissionless systems.²⁰ The latter is the case for Bitcoin, where participants are part of an open system and they all can contribute to the clearing process of the transactions. On the contrary, where blockchain is for example used in highly regulated markets, like the financial services market, it would operate as a permission-based system with authorised participants only. However, this is just a suitability suggestion relating to highly regulated markets and does not imply that permission-based blockchains will be limited to those areas.

25. Indeed, any distributed ledger network can be programmed to operate in a permission-based manner. In practical terms this means that participants and/or the gatekeeper of a closed blockchain will be required to affirmatively grant access to new joiners. Obviously such an issue could be problematic only where the blockchain system is truly indispensable for competing in the market,²¹ and access is refused without any objective justification. In other words, blockchain could be viewed as the necessary input for a given service.

26. At the current stage of the technological development it appears highly unlikely that a competition law authority would be able to demonstrate that a specific blockchain network already has developed a position of indispensability. This would not only require an assessment of the competitive position compared to other blockchain networks, but would also need to include an analysis of competition from other online or even offline technologies. For instance, the most prominent example of blockchain technology, Bitcoin, arguably competes with other cryptocurrencies and—depending on the market definition—possibly even with established payment methods such as credit cards or wire transfers.

27. Nevertheless, access to data will become a more prominent theory of harm in the future and should be carefully considered when setting up the governance of a blockchain network. The European Commission has recently carried out dawn raids in several Member States concerning online access to bank account information by competing service providers.²² According to the Commission, the alleged anticompetitive practices were aimed at excluding non-bank owned providers of financial services by preventing them from gaining access to bank customers’ account data, despite the fact that the respective customers have given their consent to such access. This demonstrates the importance competition law can play for members or managers of a blockchain network taking decisions about access of new applicants to the system.

19 On 8 November 2017 the European Commission announced the launch of the “*Study on opportunity and feasibility of a EU blockchain infrastructure*” within the context of the Digital Single Market; available here: <https://ec.europa.eu/digital-single-market/en/news/study-opportunity-and-feasibility-eu-blockchain-infrastructure> (last accessed on 15 December 2017).

20 ESMA, Report on Distributed Ledger Technology, op. cit., p. 4.

21 Case C-7/97 *Oscar Bronner GmbH & Co. KG v. Mediaprint Zeitungs- und Zeitschriftenverlag GmbH & Co. KG, Mediaprint Zeitungsvertriebsgesellschaft mbH & Co. KG and Mediaprint Anzeigengesellschaft mbH & Co. KG*, EU:C:1998:569; Communication from the Commission, Guidance on the Commission’s enforcement priorities in applying Article 82 of the EC Treaty to abusive exclusionary conduct by dominant undertakings, 24/2/2009, OJ C 45, para. 83–84.

22 EU Commission press release of 6 October 2017 (MEMO/17/3761), available here: http://europa.eu/rapid/press-release_MEMO-17-3761_en.htm (last accessed on 15 December 2017).

V. Paid prioritisation within blockchain networks

28. Prioritisation of certain transactions is not a problem per se. The commercial freedom of members of a blockchain network allows them generally to decide about the sequence of transactions being cleared. However, as competition law authorities increasingly point out to the concept of fairness and neutrality on online platforms, prioritisation—most likely in exchange for a payment—is a relevant point to consider within a blockchain network.

29. The paid prioritisation issue can be easily illustrated when put within the Bitcoin framework. Traditionally, transactions and generally any type of interaction between parties whereby one party provides a good or a service in exchange for something else are dealt with based on the “first come, first served” principle. Yet, that’s not the principle behind the clearance of Bitcoin transactions. Miners will first pick and clear those transactions which will most highly reward them. In other words, this is a form of true paid prioritisation. This is equally valid for all other potential blockchain technology networks, not just Bitcoin.

30. This phenomenon has already led to comparably high transaction fees for Bitcoin for small payments. While paying higher fees per byte almost guarantee to get a transaction cleared, participants paying at the lower end of the band will experience significant delay. Similarly, in other blockchain networks alternative factors such as corporate affiliations or membership in a consortium could trigger similar disparities in processing transactions or requests. Admittedly, this is not problematic in itself and in particular as regards Bitcoin, since Bitcoin users have plenty of alternatives in the fields of cryptocurrency²³ and different networks are available to them.

31. However, in the medium or long run this issue could come under the microscope of regulators and competition law authorities, especially if blockchain is used in highly regulated industries such as stock exchanges or those with consumer-facing applications.

32. This concern is founded on the cornerstone of competition law which is to endorse competitive markets while maintaining a level playing field. A blockchain environment allowing for paid prioritisation creates a dual speed blockchain whereby those that are able and willing to pay more will have their transactions cleared

faster. Ultimately, this means that players that are not as strong will stand on unequal footing and that in the long run start-ups, SMEs or consumers could be severely affected.

33. Again, this is not necessarily problematic in itself. Paying more in exchange for a faster service is not a new concept. It is an integral part of our society in various business segments; a bank transaction is executed faster at an additional cost and next-day delivery is available at a higher price. There need to be additional factors affecting how different prices in a network are formed, this being what actually triggers the attention of competition law authorities or regulators. In the case of the net neutrality debate, for example, two factors relating to the internet may have contributed towards the significant regulatory scrutiny that paid prioritisation has received—and is still receiving. These are, first, the fear that the increasing commercialisation of the internet would jeopardise the initial idea of a decentralised and open network which is accessible for everyone, and second, the fear that the internet’s role as an enabler of free speech could be undermined. Blockchain technology has been initially developed on exactly these concepts—namely, decentralisation and openness.

34. Despite this, the debate around net neutrality could be differentiated from our debate on blockchain on the basis that there is not only one blockchain compared to the unique nature of the internet. Nonetheless, there are other commercial and competition law related aspects that arose within the net neutrality debate that could be associated with blockchain technology. By way of example, just as stronger players in the blockchain get their transactions cleared faster, fast lanes could be created to prioritise certain content within the Web. Consequently, slow lanes would equally be created given that internet bandwidth can reach a certain capacity, just as the transactions of less strong players in a blockchain lag behind. The analogy with blockchain is clear; more bandwidth and thus faster content delivery come at a higher price, and thus fast lanes would effectively be reserved for the prevailing service providers who can afford to pay more.

35. The importance of preserving an open internet access in the EU has been officially declared in 2016 after the adoption of Regulation 2015/2120,²⁴ whereby the principle of net neutrality is enshrined into EU law. Similarly, in the US the Federal Communications Commission (“FCC”) in 2015 explicitly prohibited paid prioritisation and blocking or throttling end-users’ access.²⁵ In contrast, the US FCC under its new chairman, Ajit Pai, on 14 December 2017 repealed the US net neutrality regulations.²⁶ As laid out in a testimony

²³ Other popular cryptocurrencies include: IOTA, Ripple, Dash, Litecoin, Monero, Cardano, etc.

²⁴ European Parliament and Council Regulation 2015/2120 of 25 November 2015 laying down measures concerning open internet access, OJ L 310, 26.11.2015, pp. 1–18.

²⁵ Rule of the Federal Communications Commission, Protecting and Promoting the Open Internet, 13 April 2015, 80 FR 19737.

²⁶ Action by the FCC of 14 December 2017 by Declaratory Ruling, Report and Order, and Order (FCC 17-166).

by the Federal Trade Commission (“FTC”),²⁷ this could potentially increase the role of the FTC as competition law enforcer stepping into the role previously played by the FCC (albeit that the current enforcement powers of the FTC regarding communication carriers are more limited).

36. The regulatory interest triggered in respect of the fairness of platforms, at least in Europe, might pave the way for a similar approach towards blockchain. The blockchain environment, as an emerging decentralised technology, could well trigger attention from regulators even if the links to free speech are less obvious and there are more available alternatives. This is due to the fact that there is a general trend which looks at the power of digital platforms in an unfavourable way.

37. In the EU, these ideas are sometimes discussed under the term “fairness.” In an impact assessment of October 2017 on Fairness in platform-to-business relations, the European Commission expressly raised concerns regarding situations in which there is discriminatory access to data on a platform: “*Some platforms may favour own products or services, or discriminate between different third-party suppliers and sellers, e.g. on their search facilities or by capitalising on superior data access. The general inability for business users to verify the existence or absence of such discriminatory practices also leads to uncertainty that can in itself be harmful.*”²⁸ This broad catch-all concept could very well be used to scrutinise blockchain.

38. While it is too early to predict the outcome of a hypothetical debate regarding this nascent technology, it is conceivable that blockchain networks used in heavily regulated areas could be the first to come under scrutiny. Relevant factors for policy or competition law action would be (i) whether paid prioritisation within a blockchain evolves into a problem for consumers or small businesses, (ii) whether there are alternative blockchain networks to which those users can divert, and (iii) whether those on the blockchain network who cause the clearance of transactions to be bottlenecked are easily identifiable. It will be more difficult, for instance, to take competition law action against the masses of Bitcoin miners than against a more limited number of mining pools.

VI. Scrutinising blockchain: Competition law or regulation?

39. The three potential competition law concerns regarding blockchain—information exchange, access questions and prioritisation—are still at an early stage of the academic debate. It is unclear whether competition law authorities will ever consider that one of these aspects raises problems on a specific market. However, this is not the only question mark. Competition law authorities may face competition themselves when it comes to the enforcement vis-à-vis blockchain. Other regulatory authorities such as telecommunication, network or financial supervisory bodies are likely to also have an interest in these aspects.

40. Paid prioritisation will most likely feature as the main issue which regulators will carefully analyse when deciding whether regulation would be the most efficient mechanism compared to competition law. This is so especially given that, as explained above, in the recent net neutrality debate regulatory instruments at least initially prevailed. And as blockchain technology evolves and penetrates into different industries, it is likely to increasingly attract several authorities’ attention.²⁹

41. In this regard, the US initially took a more interventionist approach than the EU,³⁰ albeit that the current administration has changed its enforcement approach. Regulators might consider specific rules on blockchain and regulate the way they should operate in an effort to combat paid prioritisation, while proactively dealing with traditional competition law issues. But regulation is not the only supervisory mechanism available; competition law supervision has concrete support. Blockchain activists should carefully analyse how strongly the FTC argued against net neutrality regulation and in favour of competition law supervision.

42. Acting FTC Chairman Maureen Ohlhausen in July 2017 commented: “*In dynamic, innovative industries like internet services, an ex post case-by-case enforcement-based approach has advantages over ex ante prescriptive regulation. It mitigates the regulator’s knowledge problem and allows legal principles to evolve incrementally. A case-by-case approach also focuses on actual or likely,*

27 Federal Trade Commission, Press Release: FTC Testifies Before House Judiciary Subcommittee on Net Neutrality, November 1, 2017; available here: <https://www.ftc.gov/news-events/press-releases/2017/11/ftc-testifies-house-judiciary-subcommittee-net-neutrality> (last accessed on 15 December 2017).

28 European Commission, Fairness in platform-to-business relations, 25 October 2017, Inception Impact Assessment, Ares (2017) 52222469; available here: https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2017-5222469_en (last accessed on 15 December 2017).

29 Lobbying from stakeholders in this regard could prove crucial to educate the competent authorities of this new technology and discuss offline initial concerns. See C. Mariani and S. Pieri, Lobbying Activities and EU Competition Law: What Can be Done and How?, 2014, *Journal of European Competition Law & Practice*, Vol. 5, No. 7, p. 423.

30 The uncertainty created by the adoption of different approaches by the two main competition law systems—namely, the US and the EU—can prove very problematic and unhelpful for businesses. See A. Pretorius and G. Aylward, Electronic commerce: bringing competition enforcement into the digital age, 2016, *Competition Law Insight*, Vol. 15, Issue 10, p. 17.

*specifically-pled harms rather than having to predict future hypothetical harms.*³¹ The same comment could be made for blockchain. Competition law aims to preserve the competitive process while not dictating market outcomes. The premature stage of blockchain deployment in various business segments indicates that consumer demand cannot be forecasted by regulators and embodied in *ex ante* regulation rules.

43. The European Parliament seems to adhere to this approach. Referring in particular to Bitcoin, it acknowledged that the risks inherent to a distributed ledger technology might finally lead to regulation. At the same time it reiterated that adopting regulation at a “*very early stage (...) may not be adapted to a state of affairs which is still in flux and may convey a wrong message to the public about the advantages or security of virtual currencies.*”³² Indeed, the determination of whether paid prioritisation in a blockchain network harms consumers or competition requires a careful economic analysis. As laid down above, the precondition would be a dominant position or market power and a lack of competitive alternatives which would set a high threshold for competition law enforcement.³³ Thus, competition law will probably be viewed as the most suitable tool for dealing with such issues in the future, striking the fine balance between protection of the competitive process and satisfaction of consumer demand. For issues such as information exchange within a blockchain environment competition law also seems best placed to deal with using traditional competition law enforcement tools and methods.

VII. Final considerations

44. The blockchain technology is likely to be as vulnerable to scrutiny from competition law enforcers as any other technology. Distributed ledgers can give rise to the traditional competition law issues of Articles 101 and 102 TFEU. The idea of *ex ante* regulation to proactively deal with some of those issues has been explored by regulators both in the EU and the US. Although there is a clear need for a predictable framework, pre-emptive regulation does not appear to

be an appropriate instrument for a dynamic and nascent technology. At least from a European competition law perspective, competition law enforcers should rather rely on precautionary monitoring, using existing tools to understand in depth the emerging market and adapt accordingly.

45. EU competition law has proven a remarkably flexible tool adapting to emerging technologies that the founding fathers were unable to have contemplated at its inception. The main concepts have, however, remained the same. This conceptual consistency provides the basis enabling to sketch out how certain novel issues could be dealt with. Blockchain is a fascinating technology that can undoubtedly provide significant benefits to various industry sectors. As the concept is digested by the market, society will become familiar with its effects and uses. It is at this later stage that competition law enforcement may become more likely. However, since the concepts that could trigger an investigation remain the same, there is already room for the undertakings to act proactively and take all necessary steps to avoid or significantly reduce such an outcome.

46. In sum, this could entail creating clear instructions on the type and quality of information that should or should not be circulated within a blockchain. Additionally, raising awareness regarding the meaning of consensus within the blockchain could prove crucial. It would be enough that one undertaking circulates sensitive information regarding future behaviour, for all other participants to be held liable for tacitly accepting this exchange and adhering to the conduct. Thus, proceeding to actions that could qualify as public distancing will be imperative. Similarly, criteria set as conditions upon accessing a certain blockchain network should be created in a prudent and diligent manner.

47. As regards the net neutrality debate the lesson learnt is that early engagement in political and regulatory discussions will help to educate decision makers in order to fend off overly burdensome regulation. In any event, *ex ante* regulation has always been perceived as more suitable for non-liberalised markets or markets under liberalisation. Existing competition law powers would help shape the argument that *ex post* enforcement is more suitable for the blockchain technology. ■

31 Comment of Maureen K. Ohlhausen, Acting Chairman of the Federal Trade Commission before the Federal Communications Commission in the matter of Restoring Internet Freedom, 17 July 2017, WC Docket No. 17-108, p. 12. See also M. K. Ohlhausen, Identifying, Challenging, and Assigning Political Responsibility for State Regulation Restricting Competition, 2006, *Competition Policy International*, Vol. 2, No. 2, p. 151.

32 European Parliament, Motion for a European Parliament Resolution on Virtual Currencies, 3 May 2016, 2016/2007(INI).

33 C. Manara, La “search neutrality”: Mythe ou réalité?, *Concurrences* N° 1-2011, p. 52.

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