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Justus Haucap

Competition and Competition Policy in a Data-Driven Economy

Digitisation processes have – often through disruptive innovations – injected additional competition in many markets, be it online retailing, new transport platforms, electronic banking and brokerage, online travel agencies or new media formats. At the same time, a number of companies, namely Google, Amazon, Facebook, Apple and Microsoft (GAFAM), have become so valuable and (allegedly) also so powerful that competition authorities, legal scholars, economists and others social scientists and, most importantly, policymakers around the globe have become increasingly concerned about concentration and market power in digital markets. A number of competition authority inquiries and reports¹ and Government commissioned policy studies² reflect this growing concern. The present paper discusses the main competition concerns in digital markets and presents proposals for further competition policy reforms.

What is different in the digital economy?

Two key developments have changed value chains and competitive processes in many industries and markets:

1. Digital platforms have tremendously gained in importance, as platforms have either replaced traditional forms of intermediation in many industries or facilitated exchange that has previously not taken place because of coordination problems and/or lacking trust.³

2. Data has become a critical input for production and distribution processes in many industries, such as agriculture, industrial production, logistics, marketing, retailing, finance and many other parts of the value chain.⁴

As it has become so important, data is sometimes referred to as the ‘new oil’.⁵ While the analogy of data as the 21st century’s oil may sound appealing, it is also misleading for a variety of reasons:⁶

- Data is – in stark contrast to oil – non-rival in use. One person’s usage of data does, technically speaking, not prevent another person from using the same data (apart for legal reasons).
- While data is used, oil is used up – which means that data can be shared while any given quantity of oil can only be used by one party or the other but not simultaneously or even sequentially by both parties.
- Oil is a finite resource while data is not only non-exhaustible, but even growing.

These differences have substantial consequences for competition policy, as we will discuss later.

Nevertheless, the analogy of data being the new oil is sensible in that the world’s five most valuable companies in June 2008 were ExxonMobil, PetroChina, Gazprom, Petrobras and ChinaMobile,⁷ while in 2018 the Top 5 consisted of Apple, Alphabet (Google), Amazon, Microsoft and Facebook.⁸ In other words, about ten years ago, four of the five most valuable companies in the world were active in natural resource extraction, while today the five most valuable firms are all active in the ‘data economy’. Another similarity may be, as the joke goes, that both data and oil are extracted via platforms.

1 See, e.g. Autorité de la concurrence, Bundeskartellamt: Competition Law and Data, Joint paper, 2016, available at <https://www.bundeskartellamt.de/SharedDocs/Publikation/DE/Berichte/Big%20Data%20Papier.html>; ACCC: Digital Platforms Inquiry: Preliminary Report, Canberra 2018, Australian Competition & Consumer Commission; OECD: Rethinking Antitrust Tools for Multi-Sided Platforms, Paris 2018, OECD Publishing.

2 Including H. Schweitzer, J. Haucap, W. Kerber, R. Welker: Modernisierung der Missbrauchsaufsicht für marktmächtige Unternehmen, Baden-Baden 2018, Nomos Verlag; J. Cr  mer, Y.-A. de Montjoye, H. Schweitzer: Competition Policy for the Digital Era: Final Report, Luxembourg 2019, Publications Office of the European Union; and J. Furman, D. Coyle, A. Fletcher, D. McAuley, P. Marsden: Unlocking digital competition. Report of the Digital Competition Expert Panel, London 2019, UK Government.

3 See, e.g. D.S. Evans, R. Schmalensee: Matchmakers: The New Economics of Multisided Platforms, Boston 2016, Harvard Business Review Press; G.G. Parker, M.W. van Alstyne, S.P. Choudary: Platform Revolution: How Networked Markets Are Transforming the Economy and How to Make Them Work for You, New York 2016, Norton; J. Haucap, U. Heimeshoff: Google, Facebook, Amazon, eBay: Is the Internet driving competition or market monopolization?, in: International Economics and Economic Policy, Vol. 11, No. 1-2, 2014, pp. 49-61.

4 See, e.g. V. Mayer-Sch  nberger, K. Cukier: Big Data: A Revolution That Will Transform How We Live, Work, and Think, London 2013, Jon Murray; D.L. Rogers: Digital Transformation Playbook: Rethink Your Business for the Digital Age, 2016, Columbia University Press.

5 An analogy reportedly first used in 2006 by Clive Humby, a British mathematician who developed the UK supermarket chain Tesco’s customer card, see M. Palmer: Data is the new oil, available at http://ana.blogs.com/maestros/2006/11/data_is_the_new.html.

6 See also D.D. Hirsch: The glass house effect: big data, the new oil, and the power of analogy, in: Maine Law Review, Vol. 66, 2014, pp. 373-395.

7 See Financial Times Global 500, available at https://de.wikipedia.org/wiki/Financial_Times_Global_500.

8 See L. Shen: Here Are the Fortune 500’s 10 Most Valuable Companies, Fortune, 21 May 2018, available at <http://fortune.com/2018/05/21/fortune-500-most-valuable-companies-2018/>.

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Neither platforms nor the use of data are completely new phenomena. Platforms have always been used to organise transactions. Medieval markets and trade fairs are early examples of platform markets.⁹ Organised exchanges for financial assets and raw materials are other examples as are media outlets such as newspapers or free TV channels.¹⁰ There are two important developments with respect to platforms though. While transaction and transport or travel costs as well as capacity limits have traditionally provided natural limits to platform growth, transaction and transport costs have tremendously decreased. The 'death of distance' and the decline of transaction costs have led to tremendous platform growth.

Similarly, data has always been used by businesses to design products and to organise production processes. However, as the costs of collecting, storing, processing and analysing data have decreased tremendously, more and more data is and will be used. These two developments, i.e., the increasing importance of platforms on the one hand and the role of data as a critical resource on the other, are the key drivers of structural change in the so-called digital economy.

What determines competition in platform markets?

The degree of competition in platform markets is often (but not always) determined by direct and indirect network effects and switching costs.¹¹ Many digital markets operate as multi-sided platforms where a platform operator brings two different groups of customers together, for example buyers and sellers or 'users' and 'providers'. A market is typically called two- or even multi-sided if indirect network effects are of major importance.¹²

Direct and indirect network effects

Direct network effects are related to the size of a network and mean that the utility that a user receives from a particular service is directly affected by the number of other users.¹³ The classical example is telecommunications networks, e.g. a service such as Skype or WhatsApp becomes more attractive the more users it has, just as the possibility of communication amplifies as the number of other Skype or WhatsApp users increases. Similarly, if a large customer base is already using certain social networks such as Facebook or LinkedIn, this tends to attract even more users, as a large customer base increases the probability of finding valuable contacts.

In contrast, indirect network effects arise if the increase in the number of users on one side of the market attracts more users on the other market side. While there is no direct benefit of an increase in users on the same market side (in fact there may even be negative direct effects via increased competition), the network effect unfolds indirectly through the opposite market side as an increase in users on one market side attracts more potential transaction partners on the other market side. Taking eBay or Amazon Marketplace as illustrations, more potential buyers attract more sellers to offer goods on these platforms as

- (a) the likelihood to sell their goods increases with the number of potential buyers and
- (b) competition among buyers for the good will be more intense and, therefore, auction revenues are likely to be higher.¹⁴

And, a higher number of sellers and an increased variety of goods offered make the trading platform more attractive for more potential buyers. While buyers do not directly benefit from additional buyers, they indirectly benefit as more buyers attract more sellers. Similarly, sellers do not directly benefit from additional sellers, but as more sellers attract more buyers, the sellers indirectly benefit from additional sellers.

These indirect network effects are the key characteristics of two-sided markets. While market places such as fairs, ex-

9 For an analysis see P.R. Milgrom, D.C. North, B.R. Weingast: The role of institutions in the revival of trade: the law merchant, private judges, and the champagne fairs, in: *Economics and Politics*, Vol. 2, No. 1, 1990, pp. 1-23.

10 See, S. Anderson, J. Gabszewicz: The media and advertising: A tale of two-sided markets, in: V.A. Ginsburgh, D. Throsby (eds.): *Handbook of the Economics of Art and Culture*, Vol. 1, Amsterdam 2006, Elsevier, pp. 567-614.

11 See, e.g. D.S. Evans, R. Schmalensee: The industrial organization of markets with two-sided platforms, in: *Competition Policy International*, Vol. 3, No. 1, 2007, pp. 151-179; J. Haucap, T. Stühmeier: Competition and Antitrust in Internet Markets, in: J. Bauer, M. Latzer (eds.): *Handbook on the Economics of the Internet*, Cheltenham 2016, Edward Elgar, pp. 183-210.

12 J.-C. Rochet, J. Tirole: Platform competition in two-sided markets, in: *Journal of the European Economic Association*, Vol. 1, No. 4, 2003, pp. 990-1029; J.-C. Rochet, J. Tirole: Two-sided markets: A progress report, in: *RAND Journal of Economics*, Vol. 37, 2006, pp. 645-667; J. Wright: One-sided logic in two-sided markets, in: *Review of Network Economics*, Vol. 3, No. 1, 2004, pp. 42-63; M. Armstrong: Competition in two-sided markets, in: *The RAND Journal of Economics*, Vol. 37, No. 3, 2006, pp. 668-691; M. Rysman: The economics of two-sided markets, in: *Journal of Economic Perspectives*, Vol. 23, No. 3, 2009, pp. 125-143.

13 J. Rohlfs: A theory of interdependent demand for a communications service, in: *Bell Journal of Economics and Management Science*, Vol. 5, 1974, pp. 16-37; M. Katz, C. Shapiro: Network externalities, competition, and compatibility, in: *American Economic Review*, Vol. 75, No. 3, 1985, pp. 424-440; J. Farrell, G. Saloner: Standardization, compatibility, and innovation, in: *RAND Journal of Economics*, Vol. 16, 1985, pp. 70-83.

14 J.C. Rochet, J. Tirole: Platform competition..., op. cit.; J.C. Rochet, J. Tirole: Two-sided markets..., op. cit.; G. Ellison, S.F. Ellison: Lessons from the Internet, in: *Journal of Economic Perspectives*, Vol. 19, No. 2, 2005, pp. 139-158; D.S. Evans, R. Schmalensee: The industrial organization..., op. cit.

changes or malls have always shown these indirect network effects, capacity constraints and transport costs or travel times have limited their expansion. In contrast, capacity constraints and transport costs or travel times play virtually no role in online markets so that further market concentration processes can be expected. The so-called 'death of distance' removes the natural barrier to expansion imposed on traditional market places through travel costs, while the virtual location on the internet removes the barrier to expansion traditionally imposed by space or capacity constraints.

Apart from eBay and Amazon Marketplace, prominent online platforms that exhibit indirect network effects are Uber, Lyft and similar ride-sharing platforms, Airbnb, Expedia, Booking and other travel-related booking platforms, Google, Bing and other search engines, Craigslist, file sharing networks and many other platforms and applications.

From a competition policy point of view, it is important to note that network effects often make large platform sizes indispensable in order to achieve an efficient utilisation of the platform. Hence, if 'multi-homing' (the possibility of participating in several platforms at the same time) is difficult for some reason, large platform sizes will also lead to high concentration levels that cannot simply be interpreted in the same manner as such case in conventional markets without network effects.¹⁵ In fact, the existence of one large market place can be efficient, as it helps to reduce search costs for potential trading partners compared to a situation in which a large number of small marketplaces exist. Note, however, that network effects do not need to induce high concentration levels if multi-homing is easy.

From a business perspective, two-sided markets pose the challenge that it is not sufficient for the platform operator to convince only users of one market side to join the platform, as there is an interrelationship between the user groups on both market sides. Neither the buyer side nor the seller side of the market can be attracted to join the platform if the other market side is not sufficiently large. This is a realisation of the well-known 'chicken-and-egg problem' where both sides of the market affect each other and no side can emerge without the other.¹⁶ As a consequence, often one side of the market is 'subsidised' by the other, less price sensitive, side.¹⁷ Products such as Acrobat Reader, Micro-

soft's MediaPlayer or the RealPlayer are available free of charge for consumers as are search engines or shopping on online trading platforms. As a result, platform operators generate most of their profits on the market side with the lower price elasticity of demand.

As a consequence of indirect network effects, platform markets may be more concentrated than traditional markets. However, this does not imply that every digital platform market is automatically highly concentrated. Counterexamples include online real estate brokers, travel agents and many online dating sites where several competing platforms (still) co-exist. Hence, the presence of indirect network effects is by no means sufficient for a monopoly or even high levels of market concentration to emerge. Moreover, competition between several platforms is not necessarily welfare enhancing when compared to monopolistic market structures. Although competition between several firms is considered as almost always beneficial in 'traditional' markets (as long as the particular market under consideration is not characterised by natural monopoly conditions), this does not always hold for two-sided markets. Even if multiple platforms are not associated with a duplication of fixed costs, the existence of multiple platforms may not be efficient due to the presence of indirect network effects. As Caillaud & Jullien and Jullien have shown, a monopoly platform can be efficient because network effects are maximised when all agents manage to coordinate over a single platform.¹⁸ Hence, strong network effects can easily lead to highly concentrated market structures, but they also tend to make these highly concentrated market structures efficient as long as multi-homing is not possible.¹⁹

Capacity constraints (and the associated risk of platform overload), heterogeneous preferences (and the resulting potential for platform differentiation) and users' multi-homing tend to drive competition in digital markets. Therefore, it is not only unclear how market concentration and consumer welfare are related in these platform markets, but also whether the market is quasi naturally converging toward a monopoly structure.

A very important point to note is this: If multi-homing is easily possible on both sides of the market, it is feasible to fully realise all network effects and still have competition be-

15 See, e.g. J. Wright, *op. cit.*; D.S. Evans, R. Schmalensee: The antitrust analysis of multi-sided-platform businesses, in: R. Blair, D. Sokol (eds): *Oxford Handbook on International Antitrust Economics*, Vol. 1, Oxford 2015, Oxford University Press, pp. 404-449.

16 B. Caillaud, B. Jullien: Chicken & egg: Competition among intermediation service providers, in: *RAND Journal of Economics*, Vol. 34, 2003, pp. 309-328.

17 J. Wright, *op. cit.*; G.G. Parker, M.W. van Alstyne: Two-sided network effects: A theory of information product design, in: *Management Science*, Vol. 51, No. 10, 2005, pp. 1494-1504.

18 B. Caillaud, B. Jullien, *op. cit.*; B. Jullien: Two-sided markets and electronic intermediaries, in: G. Illing, M. Peitz (eds): *Industrial Organization and the Digital Economy*, Cambridge, MA 2006, MIT Press, pp. 272-303.

19 See also E.G. Weyl: A price theory of multi-sided platforms, in: *American Economic Review*, Vol. 100, No. 4, 2010, pp. 1642-1672; A. Chandra, A. Collard-Wexler: Mergers in two-sided markets: An application to the Canadian newspaper industry, in: *Journal of Economics and Management Strategy*, Vol. 18, No. 4, 2009, pp. 1045-1070.

tween platforms. In theory, all users from both market sides could register on one, two or many platforms, thereby facilitating competition between platforms without foregoing any of the network effects. The often portrayed trade-off between the realisation of network effects on the one side and facilitating competition on the other does not necessarily exist if

- (a) multi-homing is sufficiently easy on both market sides and
- (b) network effects stem from the option to transact with each other, but not necessarily from actually transacting with as many users as possible.

Evans & Schmalensee have outlined five driving forces that determine the process and level of concentration in two-sided markets, as specified in Table 1.

Indirect network effects and economies of scale lead to increasing concentration. The strength of these indirect network effects will differ from platform to platform.

Economies of scale

However, with respect to the second driver of concentration, economies of scale, digital platforms are typically characterised by a cost structure with a relatively high proportion of fixed set-up and maintenance costs and relatively low variable costs.²⁰ For example, for eBay, Airbnb, Booking.com etc. most of the costs arise from managing the respective databases, while additional transactions within the capacity of the databases usually cause negligible additional costs. Increasing returns to scale are, therefore, rather typical for two-sided markets in the online world. While network effects and economies of scale both have a positive effect on market concentration levels, there are also three countervailing forces that facilitate market competition.

Capacity constraints

One countervailing force is capacity constraints. While in physical two-sided markets such as shopping centres, trade fairs and nightclubs, space is physically limited,²¹ this does not necessarily hold for digital platforms. Still, while physical capacity limits may be less important, advertising space is often restricted in digital markets because too much advertising is easily perceived as a nuisance by users and, therefore, decreases the platform's value in their

Table 1
Determinants of concentration on two-sided markets

Driving force	Effect on concentration
Strength of indirect network effects	+
Degree of economies of scale	+
Capacity constraints	–
Scope of platform differentiation	–
Multi-homing opportunities	–

Source: D.S. Evans, R. Schmalensee: The industrial organization of markets with two-sided platforms, in: Competition Policy International, Vol. 3, No. 1, 2007, pp. 151-179.

eyes.²² In electronic two-sided markets like online auction platforms or dating sites, capacity limits can also emerge as a result of negative externalities caused by additional users. If they make the group more heterogeneous, users' search costs may increase. In contrast, the more homogeneous the users are, the higher a given platform's value on the demand side. If, for example, only certain people visit a particular platform (as some platforms are mainly visited by women, golfers, academics, etc.), it is much easier to target advertising. Also note that many dating sites advertise that they represent a certain group of clients (for example, only academics). This reduces the search costs for all visitors involved. Additional users would make the user group more heterogeneous and not necessarily add value, as increased heterogeneity also increases the search cost for other users.

Product differentiation between platforms

Directly related to the platforms' heterogeneity is the degree of product differentiation between platforms. In the case of dating sites, magazines and newspapers, it is almost always evident that consumer preferences are heterogeneous so that some product differentiation emerges. Such differentiation can be vertical (e.g., for the advertisers, high-income users may be more interesting than a low-income audience) and horizontal (e.g. people interested in sailing versus people interested in golf). The higher the degree of heterogeneity among potential users and the easier it is for platforms to differentiate, the more diverse platforms will become and the lower the level of concentration will be.

The finding that increasing returns to scale foster market concentration while product differentiation and heteroge-

²⁰ See, e.g. B. Jullien, op. cit.

²¹ The capacity on one side of the market may be more limited than on the other. For example, the number of stands may be more limited at a trade show than the space for potential visitors.

²² See, e.g. G.S. Becker, K.M. Murphy: A simple theory of advertising as a good, in: Quarterly Journal of Economics, Vol. 108, No. 4, 1993, pp. 941-964; K. Bagwell: The economic analysis of advertising, in: M. Armstrong, R. Porter (eds): Handbook of Industrial Organization, Vol. 3, Amsterdam 2007, Elsevier, pp. 1701-1744.

neity of user preferences work in the other direction is not new.²³ On platform markets, increasing concentration will be driven by indirect network effects, but capacity limits, product differentiation and the potential for multi-homing will decrease concentration levels.

Switching costs and multi-homing

How easy it is for consumers to multi-home depends, among other things, on

- (a) switching costs (if they exist) between platforms and
- (b) whether usage-based tariffs or positive flat rates are charged on the platform.

To illustrate this, consider online travel agencies such as Expedia. Switching from one online travel agency to another is usually associated with relatively low switching costs. Multi-homing is also simple, as travellers can easily search for flights, hotels, etc. over more than one platform before actually booking, and airlines, hotels, etc. can easily be listed on more than one platform. With respect to search engines, users can also switch away from Google to another general search engine such as Bing or even to specialised searches over Amazon, TripAdvisor, social networks (for people), library catalogues, travel sites and restaurant guides easily and without major costs if a switch appears to be attractive.

In contrast, switching costs between social networks such as Facebook are generally much higher because of strong direct network effects and the effort needed to coordinate user groups. While for search engines such as Google no significant direct network effects exist, i.e. it does not matter how many other people use Google, this is not true for social networks such as Facebook where the number of users is a very important utility factor.

Still entry into the search engine business is not easy due to the indirect network effects described above and the economies of scale that are at least partly based on

- (a) learning effects, which depend on the cumulative number of searches made over the network in the past and user data collected from other sources and
- (b) decreasing average costs, which are caused by substantial fixed costs of the technical infrastructure.

²³ See, e.g. A.K. Dixit, J.E. Stiglitz: Monopolistic competition and optimum product diversity, in: *American Economic Review*, Vol. 67, No. 3, 1977, pp. 297-308; P. Krugman: Scale economies, product differentiation, and the pattern of trade, in: *American Economic Review*, Vol. 70, No. 5, 1980, pp. 950-959.

Another form of switching cost exists on auction platforms such as eBay where, apart from indirect network effects, the user's reputation is also highly relevant.²⁴ Being a function of the number of transactions already conducted over the platform, the user's reputation is typically platform-specific (e.g. for eBay), so that changing platforms involves high switching costs because it is difficult – if not impossible – to transfer one's reputation from one platform to another.

Competition policy for platform markets

Many high-profile cases have dealt with prominent platforms. The European Commission has handed out substantial fines to Google in recent years, as Google has abused its market power in the Commission's view. In June 2017, the European Commission fined Google 2.42 billion euro for abusing its market dominance as a search engine by giving an advantage to Google Shopping that was not objectively justified. In July 2018, the Commission fined Google another 4.34 billion euro for a breach of article 102 of the Treaty on the Functioning of the European Union (TFEU) as the Commission believes that Google engaged in practices with regard to Android mobile devices to strengthen the dominance of Google's search engine. Finally, in March 2019, the European Commission fined Google another 1.49 billion euro for an abuse of its market dominance by imposing a number of restrictive clauses in contracts with third-party websites which prevented Google's rivals from placing their search adverts on these websites. Similarly, the German Cartel Office – the Bundeskartellamt – has prohibited some of Facebook's data collection practices, although without fining the company for its alleged abuse of dominance. Moreover, the European Commission is currently investigating parts of Amazon's behaviour vis-à-vis shops using Amazon Marketplace. At the same time, Amazon has just reached a settlement with the Bundeskartellamt, after agreeing to change several clauses in its terms and conditions that were deemed unfair for Amazon Marketplace sellers.

In addition to these high-profile cases, a number of policy reports have recommended further changes to competition law.²⁵ Following recommendations from Germany's Monopolies Commission, several changes have already been adopted within Germany's competition law.²⁶ Apart from introducing a new merger threshold based on a proposed merger's value, the most notable addition has been §18

²⁴ See, e.g. M.I. Melnik, J. Alm: Does a seller's ecommerce reputation matter? Evidence from eBay auctions, in: *Journal of Industrial Economics*, Vol. 50, No. 3, 2002, pp. 337-349; P. Bajari, A. Hortaçsu: Economic insights from Internet auctions, in: *Journal of Economic Literature*, Vol. 42, No. 2, 2004, pp. 457-486.

²⁵ See H. Schweitzer et al., op. cit.; J. Crémer, Y-A. de Montjoye, H. Schweitzer, op. cit.; J. Furman et al., op. cit.

²⁶ See Monopolkommission (German Monopolies Commission): Wettbewerbspolitik: Herausforderung digitale Märkte, Sondergutachten 68, Bonn 2015, Monopolkommission.

sec. 3a of Germany's Act against Restraints of Competition, introduced in 2017:

In particular in the case of multi-sided markets and networks, in assessing the market position of an undertaking account shall also be taken of:

1. direct and indirect network effects,
2. the parallel use of services from different providers and the switching costs for users,
3. the undertaking's economies of scale arising in connection with network effects,
4. the undertaking's access to data relevant for competition,
5. innovation-driven competitive pressure.²⁷

This list of criteria reflects the criteria developed in the economic literature and summarised in Table 1.

Exclusionary behaviour

While this list may be helpful for the Bundeskartellamt and the courts to assess a platform's market power once it is already dominant, the new paragraph provides no new safeguards or constraints with respect to platforms' behaviour. However, in platform markets incentives to foreclose are in general much stronger than in 'traditional' markets, as online platforms operate in 'tippy markets' or so-called 'winner-takes-all markets'. Due to the network effects and the chicken-and-egg problem described above, entry becomes rather difficult once a platform market has been monopolised. As Segal & Winston have shown in their seminal paper it can be sufficient to capture only small parts of the market to render a market uncontestable in the presence of economies of scale (as even efficient competitors may not be able to reach an efficient scale if enough customers face switching costs).²⁸ This logic is strengthened if there are network effects on top of economies of scale – actually a situation rather characteristic of most digital platforms. Hence, direct and indirect network effects plus economies of scale often give rise to 'winner-takes-all markets' or 'tippy markets' if many users find it difficult or unattractive to multi-home. As Katz has expressed in his expertise for the OECD: "Although the issues are particularly difficult, there are also reasons to believe that two-sided markets may be particularly fertile ground for exclusionary behaviour".²⁹ Similarly, Amelio, Karlinger & Valletti write: "Traditional exclusionary practices carry over to platform competition and in some circumstances indirect net-

work externalities accentuate the incentive to foreclose by incumbents".³⁰ Similarly, Vasconcelos has highlighted the increased risk of exclusionary behaviour for digital platforms.³¹

Since incentives to foreclose platform markets by impeding multi-homing³² are strong and competition more difficult to reinstall once a market has tipped, preserving multi-homing options should be a key concern of competition authorities. Moreover, there are good reasons to intervene even before a platform has acquired dominance, as the damage to competitive processes can be almost irreversible or at least very difficult to revert in winner-takes-all markets. In Schweitzer et al. we have therefore suggested a stepwise approach with more shades of grey for competition law.³³ More precisely, we propose that for platforms that may not yet be dominant but that have relative or superior market power, the burden of proof should shift to the platform if it wants to restrict multi-homing. Note that the concept of relative or superior market power is already established in §20 of Germany's Act against Restraints of Competition and applies to firms that are significantly larger than their next competitor even though they may not be dominant. Such a provision may ultimately not prevent tipping altogether – in fact, if firms can demonstrate that multi-homing jeopardises efficiency, the market will still tip into monopoly. However, such a clause that reverts the burden of proof to platforms with superior market power would provide at least some backstop against tipping and help to preserve competition when multi-homing is feasible. Recall again that multi-homing competition between platforms does not automatically imply a loss of network effects.

Of course, lowering the threshold for intervention may potentially lead to over-enforcement. Even setting aside the fact that many researchers are currently concerned about past under-enforcement in antitrust and consider this to be one of the reasons for the growing mark-ups and increasing market concentration observed in some countries,³⁴ erring on the side of over-enforcement rather than under-enforcement appears to be justified. This is because the welfare losses caused by under-enforcement are difficult to revert due to the fact that it is difficult to reinstall competition once a platform market has turned into a monopoly due to the tippy nature of these markets. In contrast, the welfare costs of over-en-

27 Germany's Act against Restraints of Competition, available at https://www.gesetze-im-internet.de/englisch_gwb/englisch_gwb.html.

28 I.R. Segal, M.D. Winston: Naked exclusion: Comment, in: *American Economic Review*, Vol. 90, No. 1, 2000, pp. 296-309.

29 M. Katz: Exclusionary conduct in multi-sided markets, in: OECD (ed.): *Rethinking Antitrust Tools for Multi-Sided Platforms*, Paris 2018, OECD Publishing.

30 A.L. Amelio, L. Karlinger, T. Valletti: Exclusionary practices and two-sided platforms, in: OECD (ed.): *Rethinking Antitrust Tools for Multi-Sided Platforms*, Paris 2018, OECD Publishing.

31 H. Vasconcelos: Is exclusionary pricing anticompetitive in two-sided markets?, in: *International Journal of Industrial Organization*, Vol. 40, 2015, pp. 1-10.

32 See, e.g. the European Commission's findings in its Google AdSense case.

33 H. Schweitzer et al., op. cit.

34 See, e.g. J.B. Baker, F. Scott Morton: *Confronting Rising Market Power*, econfip Research Brief No. 11, 2019, Economics for Inclusive Prosperity.

forcement appear to be lower, as prohibiting strategies that impede multi-homing may possibly reduce competition between firms, but such a prohibition could easily be reverted.

Merger control

A second area of concern for many competition experts includes so-called 'killer acquisitions' where large platforms such as the GAFAM companies³⁵ purchase companies that are potential competitors in order to 'kill' the potential competition. The acquisition of WhatsApp by Facebook is an often cited example as it killed WhatsApp's potential ambitions to become a social network that competes with Facebook. In many of these 'conglomerate mergers', the acquirer and the target initially operate in different product markets, as they offer different services with different functionalities that may satisfy different needs. As a result, these 'conglomerate' mergers are often unchallenged by competition authorities.

In order to strengthen merger control, various proposals are being discussed. One proposal consists of defining markets more broadly as general 'markets for attention'. Firms such as Netflix, Facebook, YouTube and many others compete for users' attention, either to directly generate revenues (as Netflix does) or to indirectly generate revenues through longer exposure to advertising (as YouTube and Facebook do). The disadvantage of an approach that widens market delineations is that – while Facebook and WhatsApp and many other services may be considered competitors in a 'market for attention' so that they can be better targeted by merger control – the market may be defined too broadly in the end, which may actually jeopardise abuse control as fewer firms would be found dominant in such a market.

A second proposal is to allow competition authorities to also take the acquisition strategies of firms into consideration as part of merger control. While merger control traditionally looks at each acquisition as a separate case, considering the acquisition strategies of dominant firms also requires an analysis of the 'big picture' in order to evaluate the competitive effects of a sequence of acquisitions. In any case, a stricter approach to merger control with respect to so-called killer acquisitions appears justified.

While there seems to be some agreement that competition authorities should be able to address killer acquisitions, one should also bear in mind that the very possibility that successful start-ups may be bought by one of the GAFAM companies also serves as an incentive to be creative for many founders. Therefore, it is much less clear how merger policy can be best reformed in order to prevent true killer acquisitions while not jeopardising innovation incentives at the same time.

³⁵ Google, Amazon, Facebook, Apple and Microsoft.

Data as a resource

Data has become a crucial resource to increase firms' efficiency in product design, production, distribution, marketing and virtually all parts of the value chain. From a competition policy perspective, however, the question emerges whether a firm's data 'treasure' can be the source of competitive advantage that makes it very unlikely or even impossible for other firms to catch up in the foreseeable future. Put differently, will access to some data become so essential that a firm's competitive advantage cannot (or is very unlikely to) be reached any more by its competitors?

Under which conditions should third-party access be granted? And should access be granted at all below the legal threshold developed for so-called 'essential facilities'? In other words, should third-party access to data be easier than access to classic essential facilities?

The principle idea that dominant firms may need to grant third-party access to their physical and intellectual properties is not completely new. In fact, in many infrastructure or utility industries, such as telecommunications, electricity, natural gas, railways and postal services, competition has been established by requiring incumbent firms to open their networks and grant third parties access to their facilities. However, the threshold to be met in order to mandate access by regulation or competition law is traditionally quite high. Substantial legal tests or barriers had to be passed before access obligations were imposed on infrastructure owners. The (economic) reasons for this were twofold:

1. Investment incentives to build and to maintain costly facilities suffer if third parties can also access the facilities without sharing the investment risks.
2. These facilities are often at least partly rival in use. If one telecommunications operator takes over a customer line ('the last mile') from another operator (e.g. via local loop unbundling), the latter operator can no longer use this line. Similarly, where railtrack capacities are limited, rail-track usage is often a rival good.

In sharp contrast, this can be quite different with data. In fact, the negative impact of mandatory third-party access on investment incentives can be lower because:

1. Data is almost always non-rival in use. Hence, even if a third party uses some data, nothing stops the original data holder from also using the data. As mentioned before, data is not used up, but only used. This logic implies, as a rule of thumb, that mandatory access should be subject to a lower threshold than access to traditional infrastructure-based essential facilities that often

have some degree of rivalry in use and typically carry much more severe investment risks.

2. While data collection often requires substantial investments and carries substantial costs, this is not always the case. In fact, access to data may sometimes be the by-product of other services. The data under consideration may still be difficult to duplicate, for example, in energy networks, traffic data or machine generated data.

However, there is also an additional objective justification for *not* granting access: privacy. For personal data, privacy and data protection requirements will typically prevent third-party access. For anonymised data or non-personal data, however, data access could be granted more easily to facilitate competition.

Third-party access to data is especially relevant if one firm is already dominant in a market or if firms are dependent on another firm that has relative or superior market power.³⁶ However, in addition to data access requirements, voluntary data sharing policies should be regarded with less suspicion than traditionally under competition law.

Of course, there are many open questions that need to be resolved with respect to data access. Which standards or compatibility requirements should be imposed? What are the terms and conditions under which data access should

be granted? Should these be fair, reasonable and non-discriminatory (FRAND) conditions, as required for access to standard essential patents? Should there be safe harbours for small and medium enterprises? What should the respective thresholds be? And what is the best institutional set-up? Should competition agencies, data protection authorities or entirely new entities be in charge of regulating data access? In fact, there are many open and unresolved questions so that more thinking is required at this point.

Good reasons to adopt new competition policy measures

While digital platforms have injected competition into many markets, there is also an increased risk of market foreclosure by large platforms due to the tippy ‘winner-takes-all’ nature of these markets. Hence, there are good reasons to adopt new competition policy measures. In particular, strategies that prevent multi-homing should be subject to scrutiny by competition authorities even before platforms become dominant. The threshold of relative or superior market power that has long been established in German competition law is lower than the dominance threshold and can be useful. In addition, third-party access to data should be, in principle, easier than it is under the current essential facilities doctrine, which is largely based on experience from heavy-investment infrastructure industries that are, in contrast to data at least, partly rival in use. Regarding merger policy, there are good reasons to strengthen merger control with respect to so-called ‘killer acquisitions’. However, a delicate trade-off to preserve innovation incentives has to be resolved to achieve an optimal balance.

³⁶ For example, Argenton & Prüfer have suggested that Google should be required to grant rivals access to its data on search and click behaviour. See C. Argenton, J. Prüfer: Search engine competition with network externalities, in: *Journal of Competition Law and Economics*, Vol. 8, No. 1, 2012, pp. 73-105.