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Centre on Regulation in Europe



REPORT

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Richard Feasey  
Jan Krämer

**IMPLEMENTING EFFECTIVE REMEDIES  
FOR ANTI-COMPETITIVE  
INTERMEDIATION BIAS ON  
VERTICALLY INTEGRATED PLATFORMS**



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[info@cerre.eu](mailto:info@cerre.eu)

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## About the authors



**Richard Feasey** is a CERRE Research Fellow and an independent consultant who advises clients in the communications industry. In October 2017, he was appointed by the UK Business Secretary of State to the panel of the UK's Competition and Markets Authority and in October 2018 by the Economic Secretary of the Welsh Assembly to the National Infrastructure Commission for Wales. He lectures at University College London and Kings College London. He was previously the Public Policy Director of the Vodafone Group.



**Jan Krämer** is a CERRE Joint Academic Director and Professor at the University of Passau, Germany, where he holds the chair of Internet & Telecommunications Business. He holds a Ph.D. in Economics from the Karlsruhe Institute of Technology, where he also headed a research group on telecommunications markets. His current research interests include the regulation of telecommunications and Internet markets, as well as digital ecosystems and data-driven business models.



## Executive summary

This report considers the challenges that arise in remedying 'intermediation bias' by vertically integrated digital platforms which match the needs of different groups of users so they can transact with each other. Platforms perform this intermediation function by displaying and ranking those services or products which are most relevant to the users' needs and, in doing so, compete for consumers' attention.

### What is intermediation bias?

Platforms compete for users' attention to varying degrees depending on the ease with which users can switch between platforms and their inclination to do so, entry barriers for other platforms, and many other factors. Generally, platforms have an incentive to offer consumers the most relevant matches, because the platforms can then capture part of the value that has been created for both the consumer and the businesses that are being intermediated. However, sometimes platforms may also have incentives to deviate from offering the most relevant matches first and bias the intermediation towards matches that are more profitable to themselves. This concern is especially pronounced in the context of vertically integrated platforms which undertake both the intermediation function and supply services or products in the downstream market and who therefore have the ability to direct users' attention towards their affiliated services and products, even if rival services or products are more relevant to users' needs. Such 'biased intermediation' may harm consumers, both by providing them with poorer matches on the platform and by distorting competition in the relevant downstream market and, potentially, in the platform market itself.

Competition authorities have prosecuted a number of significant cases involving intermediation bias – including the recent Google Shopping case – and it seems likely that further cases will be pursued in the future. It can be very difficult to detect bias in the first place, or to determine the source of any bias that has been detected. Digital platforms use very complex algorithms to perform their intermediation functions and make frequent changes to them. Distinguishing between legitimate changes which improve the quality of matches and those which unfairly bias them can be very difficult since the impact of any individual adjustment can be subtle and the effects can be cumulative. This task may be even more difficult *ex post*, as competitive conditions may have changed in the meantime.

This report does not imply that all vertically integrated platforms engage in biased intermediation, nor does it elaborate on how to detect intermediation bias and theories of harm. Rather, it presupposes that a competent authority, whether a competition authority or a regulatory authority with the power to impose *ex-post* remedies, has identified intermediation bias and it is necessary to remedy it. The aim of this report is to discuss the approach to remedies in this context.

### Challenges when remedying intermediation bias

The challenge of remedying intermediation bias arises in part because a user's attention is rivalrous and the selection and ranking of matches must involve giving prominence to some results and demoting or excluding others. Non-discrimination rules of the kind applied in the regulation of vertically integrated firms in network industries would compromise the core sorting function which the platform performs. Other remedies used in network industries, such as those requiring regulated access to upstream inputs, are also inappropriate when rivals in digital markets require equal access to users' attention rather than to specific factors of production. Effective remedies against intermediation bias must either ensure that the platform no longer has an incentive to



engage in biased intermediation by separating ownership of the platform from the entity engaged in the downstream activities, or must ensure that the platform no longer has the ability to produce matches which would harm users of the platform.

### **Factor-based and payment-based ranking mechanisms**

It is useful to distinguish between ‘factor-based’ and ‘payment-based’ mechanisms when considering how digital platforms generate and display matches. Factor-based mechanisms take observable characteristics of services or products and feed them into algorithms in order to produce relevant matches for users. Google’s organic search algorithm is a prototypical example and is believed to rely on around 200 factors which are adjusted around 1,000 times a year. The choice of factors and the relative weight attached to any of them are decisions made by the platform itself and, since they determine the quality of the intermediation service which the platform provides, remain commercially confidential to the platform. Nonetheless, a ‘search engine optimisation’ (SEO) industry has developed to assist businesses in improving their rankings on factor-based platforms. Factors could be changed to bias results and divert users’ attention to a vertically integrated platform’s own services or products and away from those of downstream rivals, or the downstream affiliate might use its inside knowledge of the factors to obtain higher rankings on the platform.

‘Payment-based’ mechanisms take the size of payments made by businesses to the platform into account when generating results, with the highest bidder securing the highest ranking. In practice, most payment-based platforms also use factor-based mechanisms to ensure that results remain relevant and so are a hybrid of the two approaches. Payments may allow a business to improve its ranking relative to the position it would obtain in the absence of payment, but only within certain limits. Payment can take many forms, but many platforms use complex auction mechanisms to determine prices. Again, an industry has developed to assist businesses in their bidding strategies for payment-based platforms. The downstream affiliate may be able to outbid its rivals and obtain higher rankings by having a better understanding of the auction mechanism or by being able to bid ‘wooden dollars’ which represent internal transfers rather than cash payments.

### **Structural separation**

The incentive of a vertically integrated digital platform to engage in intermediation bias would be removed if that platform was prohibited from participating in any relevant downstream market. This would require the separation of any existing downstream activities from ownership of the platform itself, and restrictions to prevent the platform from participating in such markets in the future.

We do not consider this remedy to be the first best option, since it would involve foregoing efficiencies which might arise from vertical integration as well as likely facing significant legal and practical challenges. Specifying the assets and activities to be separated may be more difficult with digital platforms than with traditional network industries, although separation was proposed by the US District Court in the Microsoft case. Structural separation may be a remedy of last resort if other remedies prove unviable.

### **Disclosure obligations**

Concerns about factor-based mechanisms have led to calls for greater transparency and disclosure by digital platforms. Interventions which require platforms to disclose the rules or factors which their algorithms employ are intended to serve as a deterrent against abusive conduct and ensure that it could be detected when it occurred. We are not, however, persuaded that disclosure will be sufficient to address concerns about intermediation bias. Aside from the difficulty of presenting the



information in terms anyone other than a few technical experts in large competitors would understand, it is doubtful whether the impact of any particular set of factors on competition could be determined in the abstract, nor whether the intent behind the changes to algorithms could be discerned without access to internal documents. In addition, disclosure of intellectual property to competing platforms who may then more easily replicate it may weaken incentives for platforms to invest in continuing to improve the quality of matches and may encourage users to invest even more in efforts to 'game' the algorithm to improve their rankings. The extent to which these risks might outweigh the benefits of disclosure is not well understood today.

### Random allocations and quotas

An alternative or additional remedy would involve a competition authority determining how options are displayed on the platform, rather than leaving this to the platform itself. This was the remedy in the Microsoft Internet Explorer case, in which Microsoft was required to display five browsers on the desktop (and a further seven if the user scrolled) in a random order. Google also initially proposed to display links to three rival services alongside Google Shopping, with the rivals being chosen at random from a larger pool. However, random allocation rules pose significant difficulties when the platform is aiming to present the best match (as in the case of search results) rather than a range of options which are assumed to be close substitutes for each other (as in the case of a choice of browsers). There are also questions as to how services are to qualify for the pool, how many should be drawn from it and how rules might need to be revisited as the market evolves.

An alternative approach involves the competition authority specifying, formally or informally, the outcomes which the factor-based mechanism is intended to achieve. Changes that are made by the platform to address intermediation bias might be assessed against how the ranking of the platform's own downstream services against its rivals is expected to change, or has in fact changed, as a result. There is an *ex ante* element involving predictions of how changes to algorithms might be expected to change results, illustrated by the simulations undertaken and submitted by third parties during the market testing of remedies in the Google Shopping case. There is also an element of *ex post* evaluation which might involve observing changes in market shares in the downstream market following the implement of changes to the algorithm. Prescribing outcomes or setting quotas is difficult for a competition authority and may mean that users are presented with more inferior matches from rivals rather than matches which are less biased. It also creates opportunities for rivals to use the remedy process to improve their rankings by influencing the intermediation process, rather than focussing on offering services or products that are better matches, or for the platform itself to bias results in a way which escapes detection but ensures the remedy is approved. The remedy process risks becoming very protracted and contentious as a result. However, in the absence of other ways to assess whether remedies for intermediation bias are effective, we suspect that competition authorities may rely, at least implicitly and to some extent, on some 'fair' market share benchmark when assessing whether a particular set of changes to a factor-based mechanism constitutes an adequate remedy, particularly if some form of restorative justice is being pursued.

### Payment-based allocation

Payment-based mechanisms are already used by platforms in the intermediation process and, despite potential concerns about their impact under certain conditions, are widely accepted by competition authorities. We think they might also be adopted by competition authorities as a remedy to address concerns about intermediation bias. Under such arrangements, prices can be used to allocate scarce resources, rather than their allocation being determined by opaque factor-based mechanisms that are controlled by the platform itself. Downstream rivals who wish to





improve their rankings can do so by simply bidding more. An example is the remedy adopted in the Google Shopping case, in which rival shopping services bid alongside Google's own shopping service to be displayed in the Google Shopping Box at the top of the search results page.

Payment-based remedies may, however, raise a number of concerns. It may be objected that a firm that has engaged in unlawful practices should not adopt a remedy which provides it with additional income from its rivals, particularly if income is derived from the exploitation of a dominant or bottleneck position. A more practical concern is the 'wooden dollars' issue, which recognises that payments by the platform's own downstream affiliate are internal transfers rather than the cash outflows which rival bidders are required to make. This may give the affiliate an unfair advantage and allow them to consistently outbid, and hence outrank, their rivals. This is a standard concern when a vertically integrated firm competes in a downstream market with independent rivals and this is generally addressed through the application of a 'margin squeeze' test. The application of such tests to vertically integrated digital platforms presents novel challenges but may also assist rival bidders if the test is specified *ex ante*. In the Google Shopping case, Google appears to have adopted a *de facto* margin squeeze rule when committing to bid no more than 80% of the corresponding fee it received from its retailers. If the payment-based remedy involves an auction, then competition authorities will wish to satisfy themselves that the design of the auction is consistent with the outcomes they seek to obtain. As with the specification of factor-based mechanisms, this could involve *ex ante* appraisals and tests of the auction or *ex post* adjustments if it fails to yield the outcomes which were expected.

### The need for experimentation

Both factor-based and payment-based remedies involve significant challenges for competition authorities because it is difficult to predict whether the remedy will eliminate bias or what the impact will otherwise be for competition in the downstream market. Such predictions may need to be informed by trials or experiments by technical experts, either to assess the impact of changes to factors or of particular auction designs. Even then, an *ex post* assessment of the consequences of the remedy for competition in the downstream market may be needed, and this may require the adoption of some kind of benchmark or quota against which the outcome would be assessed.

Both types of remedies present challenges and both have attracted criticism when they have been adopted to address concerns about intermediation bias. We consider payment-based remedies for intermediation bias may have a number of advantages and deserve further consideration by competition authorities. This work ought to be done before remedies need to be applied to a particular case.

We recognise that competition authorities may be reluctant to undertake their own remedy design and may prefer to rely upon proposals submitted by platforms, criticisms by rivals, or benchmarks or quotas which specify outcomes in the downstream market rather than directly addressing bias in the intermediation process itself. This seems unsatisfactory. Instead, we would urge public authorities – whether a competition authority or some other body such as a specialist 'digital agency' or another existing regulatory body – to demand access to the same experimental data which the platform itself used when proposing any particular remedy. This means the authority would have the same access to internal data and documents of a firm as it is able to obtain when seeking to establish an abuse. In addition, the authority should be able to direct the platform to run other experiments in order to assess their effect on outcomes. They might even involve their own staff in the experiments being undertaken by the platform (as some financial service regulators now do before authorising new financial products). At the same time, a platform might



submit experimental data before making changes to its factor-based mechanisms and obtain a 'safe harbour' ruling from the authority in return.

We think the sharing of experimental data in this way could significantly improve the quality and effectiveness of remedies for intermediation bias, whilst also providing greater certainty and objectivity for dominant vertically integrated platforms that perform intermediation functions. Such data is commercially sensitive and confidentiality would need to be assured. Experiments of this kind are better suited to assessing the impact of incremental changes than fundamental ones and may not be able to determine whether a particular set of changes would restore downstream market conditions to those which prevailed prior to the abuse, as opposed to those which now prevail. The experiments may impose some additional costs on platforms and should be undertaken only for the specific purpose of remedy appraisal.

Such a new approach may require new institutional arrangements and changes to the existing legal framework in order to implement them, and might involve both competition authorities and existing or new regulatory bodies working together in a way that they have not generally done to date. The boundaries between *ex ante* and *ex post* functions may be less obvious in the future: designing effective remedies for intermediation bias may require both *ex ante* assessments before they are introduced and *ex post* appraisals after implementation. It is likely to be a more iterative and a more collaborative process, informed by the scientific results of experiments, than anything we have seen undertaken by competition authorities to date.

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# INTRODUCTION AND BACKGROUND



## 1. Introduction and background

There is now a large (and growing) number of studies and legal procedures which highlight concerns about anti-competitive conduct by certain digital platforms and the exploitation of those who use them.<sup>1</sup> Each platform will have unique characteristics: some digital platforms are engaged in the supply of inputs to downstream rivals with whom they also compete, others are not. Those that do may not hold a dominant position in a relevant market or have the incentives or capacity to engage in anti-competitive conduct. The practices we discuss in this report – and the remedies to address them – may therefore arise only under certain conditions and only in relation to certain digital platforms.

The studies we refer to explain how a combination of economies of scale and network effects can lead to a single platform dominating a market. Economies of scale arise because the cost of producing digital services does not increase in proportion to the number of people consuming them. Network effects arise when digital platforms bring together different groups of users on the same or different sides of the platform so that the value of the platform for one group of users increases as users are added. The consequence of such economic characteristics is that the markets for many digital services, including search, social networking or e-commerce, are today dominated by a single firm.

There is some agreement that the role of competition policy in these circumstances should be to seek to ensure that entry by rival platforms remains possible (so as to reinvigorate competition ‘for the market’) as well as to protect competition between users of the dominant platform (ensuring competition ‘in the market’).<sup>2</sup> However, more limited progress has been made in determining what form these interventions should take, who should undertake them, or whether and how they would work.<sup>3</sup> This report examines the challenges of designing and implementing remedies to address certain forms of discrimination, which we refer to as the exercise of ‘intermediation bias’ by vertically integrated digital platforms that engage in competition with rivals in downstream markets.

The function of many digital platforms is to match the needs of different groups of users so as to enable them to transact with each other.<sup>4</sup> Platforms are said to ‘intermediate’ between these groups. The function is so common that some studies define digital platforms as businesses that perform this function.<sup>5</sup> Value is created when users transact with each other, some of which is extracted by the platform itself. In order to create good matches which result in transactions, platforms need to present consumers with options that are most relevant to their needs.

Consumers face an abundance of choices in today’s digital world. Platforms perform a function in filtering these options and organising information so that consumers who interact with the platform

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<sup>1</sup> See, for example: Cremer et al. (2019); Furman et al. (2019); Scott Morton et al. (2019) and Bundeskartellamt (2016).

<sup>2</sup> Cremer et al, pp.5-7.

<sup>3</sup> There is a greater focus in the studies referred to above on requirements that digital platforms share data about consumers on the request of those consumers, both to facilitate switching and multi-homing, and that some services should be required to be interoperable. So far as the authors are aware, these proposals have yet to be developed in any detail or to be implemented.

<sup>4</sup> Cremer et al. p.21.

<sup>5</sup> There is no single definition of a digital platform, but the European Commission notes that they “share key characteristics including the use of information and communication, technologies to facilitate interactions (including commercial transactions) between users, collection and use of data about these interactions, and network effects which make the use of the platforms with most users most valuable to other users”, European Commission (2016).



are presented with those that are most relevant to their needs. Google's founding mission, to "*organise the world's information and make it universally accessible and useful*"<sup>6</sup> reflects this purpose. Businesses interacting with the platform also derive value from being able to offer their services or advertise to consumers who have revealed an interest in services of that kind, at a time when they are likely to be most interested in them. Consumers reveal their requirements, and platforms seek to infer them, in many different ways. A very common method is for a consumer to enter a search query and for the digital platform to display the results which it considers are good matches (although digital platforms are also increasingly able to predict a consumer's needs and interests and to present options to them without being prompted). The visual presentation of the results is very important because human beings have limited capacity and often limited willingness to process information, and digital devices such as smartphone screens on which options are displayed have limited capacity to present that information to consumers.

Digital platforms have also been described as 'attention merchants'<sup>7</sup> that sell the attention of a user to businesses which are willing to pay to gain it. This is evident in the case of digital platforms that serve advertisements to consumers and sell advertising opportunities to businesses. But it is also a feature of e-commerce platforms which match sellers of products to potential buyers and many other digital platforms which seek to match groups of users. The important feature for our purposes is that user attention is a scarce and rivalrous good which can only be allocated to one or a small number of advertisements or search results in any given instance. If a user's attention is directed at one result at a particular point in time, then it will be directed away from others. This distinguishes user attention from other resources over which a digital platform might exercise control, such as the data it holds about what users do over the platform. Digital data is *per se* non-rivalrous and could be shared amongst and consumed by many different businesses at the same time. Many of the remedies which are currently being considered to address competition concerns arising from digital platforms involve the greater sharing of non-rivalrous resources like data or access to APIs. However, access to a user's attention is not something that could be shared amongst competitors in this way.

Since consumers first engage with the digital platform rather than with the advertiser or business themselves, the digital platform has the greatest influence over where a consumer's attention is directed. The platform has to offer good matches if transactions are to occur and so, in the absence of other incentives (which we discuss below), will want to direct the users' attention towards results that are most relevant to them. In this sense, online platforms fulfil an elementary role in helping consumers to make good economic decisions. This is often done by ranking results so that options which the platform considers most likely to meet the consumer's needs are displayed more prominently than other options. Ranking is also inherently rivalrous – if one search result appears at the top of the pages, others cannot do so. There are many ways in which options can be displayed so as to be more prominent on digital platforms, including listing the most relevant results at the top of the display or in a separate box, or adding features such as graphics which distinguish them from other results. Many digital platforms will display different types of results alongside each other on the same page, as when organic search results are presented alongside paid results or when e-commerce platforms offer 'best buy' or other recommendations alongside organic search results.

The control which dominant digital platforms exercise over that scarce but valuable commodity (i.e. consumers' attention) raises a number of issues. One arises from the need to balance the provision of relevant options to consumers on one side of the platform with the opportunity to sell greater

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<sup>6</sup> <https://about.google/>

<sup>7</sup> Wu (2017).



prominence or ‘preference’ to businesses on the other. As advertising on digital platforms has grown, there have been concerns that consumers will be unable to adequately distinguish between results which represent the options most likely to fulfil their requirements, and paid-for results for which prominence is instead determined, at least to some degree, by the size of the payment that is made by the business to the platform. Although payment for prominence is not normally considered by policymakers to be problematic in itself (and without it, many of the ‘free’ digital services we obtain today would be unviable),<sup>8</sup> digital platforms are increasingly required to disclose the criteria they use when displaying results so that consumers can better understand the basis on which results are being presented to them.<sup>9</sup>

Many digital platforms perform the function of intermediaries between businesses and consumers and do not engage in the supply of services or products themselves. In such cases, other businesses serve to complement the core activities of the platform and to contribute to its growth.<sup>10</sup> However, other digital platforms have chosen to enter downstream markets in order to compete with businesses that also serve as complements. Concerns about the capacity of digital platforms to direct a consumer’s attention towards some businesses and away from others are therefore particularly acute when the digital platform is vertically integrated.

In this study, we focus on concerns that arise from a platform’s ability to promote its own vertically integrated services and products irrespective of their relevance to consumers and without regard to whether payments are made. At its most extreme, it could involve an outright refusal to deal with businesses that compete with the digital platform in related markets, rendering those businesses invisible to consumers on that platform. Complaints of this kind have been made, for example, in relation to some app stores that are alleged to have excluded competing applications, or to have imposed conditions for admission which have that effect.<sup>11</sup> Outright exclusion is not, however, the focus of our report and the remedy for such practices is relatively straightforward to envisage (at least in comparison to the exercise of intermediation bias). The complementary nature of other businesses for the intermediary platform also mitigates against digital platforms systematically excluding third parties from the platform and thereby reducing the range of choices that might be available to consumers on the other side of the market.

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<sup>8</sup>Cremer et al.: “no competition policy concerns arise where the payment of commissions and its influence on the ranking is made explicit in a way that enables consumers to explicitly choose with a clear understanding of the trade-offs they are facing”, p.64.

<sup>9</sup> E.g. Article 5 of the Regulation 2019/1150 of the European Parliament and of the Council of 20 June 2019 on promoting fairness and transparency for business users of online intermediation services, OJ [2019] L 186/55; new Article 6a of the Consumer Rights Directive 2011/83 and the new Article 4a of the Unfair Commercial Practices Directive 2005/29 as amended by the future Directive of the European Parliament and of the Council as regards better enforcement and modernisation of EU consumer protection rules. See also ACCC (2018), p.10-11. Undertakings to disclose payment for results have been obtained by the UK’s Competition and Markets Authority from hotel listing sites, see

[https://assets.publishing.service.gov.uk/media/5c5ab0c9ed915d044d7f6701/Booking.com\\_Limited\\_undertakings.pdf](https://assets.publishing.service.gov.uk/media/5c5ab0c9ed915d044d7f6701/Booking.com_Limited_undertakings.pdf)

<sup>10</sup> See Parker, van Alstyne and Choudrey (2016), explaining how digital platforms curate the assets of other businesses without assuming the risks of owning assets themselves.

<sup>11</sup> Spotify has recently submitted formal complaints to the European Commission that Apple engages in a number of practices in relation to its app store platform which hinder Spotify’s ability to compete with Apple’s own music streaming service but which do not apply to other service providers who do not compete with Apple affiliate services, see <https://newsroom.spotify.com/2019-03-13/consumers-and-innovators-win-on-a-level-playing-field/>. See also a recent study by the Netherlands Authority for Consumers and Markets which suggests that some mobile operating system platforms limit competitor access to APIs and operating system functionality which their own affiliate applications use, ACM (2019). We are also aware of concerns that Google is developing features which are intended to allocate scarce and rivalrous operating system resources between different applications in order to better match user needs, see <https://android-developers.googleblog.com/2018/06/android-p-beta-2-and-final-apis.html> and <https://android-developers.googleblog.com/2018/05/whats-new-in-android-p-beta.html>



A less extreme practice which also has exclusionary intent involves promoting the results or offers of the affiliated business at the expense of competing businesses, exploiting the rivalrous nature of consumer attention in the process. Affiliated businesses can be those owned by the digital platform itself but may also, for our purposes, involve third parties who have other business relationships with the platform, including purchasing other intermediary services from it. When a platform directs consumers' attention towards these businesses and away from other more relevant results, then we refer to that practice as 'biased intermediation'.

This form of conduct by digital platforms raises a number of complex and interesting issues. The first is likely to be whether the digital platform in question occupies a dominant position in a relevant market. This is by no means obvious and should be determined on a case-by-case basis taking all the market characteristics and dynamics into account. However, for the purposes of this study, we assume that a dominant position has already been established and that a downstream competitor requires access to consumers' attention through the platform (for which there are no effective substitutes) in order to be able to compete. The second issue is even more complex and relates to whether it is unlawful for a dominant vertically integrated platform to leverage its dominance into a related downstream market, whether the control of an essential facility needs to be proved and how the anti-competitive effects of its doing so need to be demonstrated and, in particular, how these tests might apply in relation to allegations of intermediation bias. At this stage, there is no firm case-law on the issue but again, for the purposes of this study, we assume that such behaviour may be considered as anti-competitive, that the requisite legal tests have been met and that a competition authority will have a sound legal basis from which to turn to remedies.<sup>12</sup> The focus of this report is how any illegal biased intermediation by the dominant digital platform could or should then be remedied.<sup>13</sup> In this context, it is also important to distinguish between the technical possibility of a platform to bias intermediation, and the economic incentives to do so. Clearly not every platform that has the means to bias intermediation will indeed have an incentive to do so,<sup>14</sup> and many vertically integrated online platforms may therefore not engage in anti-competitive biased intermediation. However, since this report is concerned with remedies, we presuppose that a competent authority (whether a competition authority or an existing regulatory authority with competition powers) has found that biased intermediation occurred and that remedies are warranted.

Vertical leveraging is a well-established topic in competition policy, but leveraging by digital platforms is a more recent and less common phenomenon. We have seen a number of such cases in Europe, including the European Commission's recent cases against Google<sup>15</sup> (both of which involved biased intermediation as well as other practices such as tying), a case in the UK,<sup>16</sup> and

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<sup>12</sup> This issue is not, of course, straightforward, see Ibanez Colomo (2014) and, in relation to intermediation bias specifically, Wright (2011).

<sup>13</sup> The focus of the report is therefore on the remedy of abuses *ex post*, which is a task normally undertaken by competition authorities, rather than the prohibition or detection of intermediation bias *ex ante*, which might be undertaken by other regulatory bodies. We consider these institutional issues further in Section 5.

<sup>14</sup> We discuss the incentives for and against biased intermediation in more detail in Section 2.

<sup>15</sup> Case AT. 39740 [http://ec.europa.eu/competition/elojade/isef/case\\_details.cfm?proc\\_code=1\\_39740](http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=1_39740) and AT.40099 [http://ec.europa.eu/competition/elojade/isef/case\\_details.cfm?proc\\_code=1\\_40099](http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=1_40099). We also note reports of similar complaints to the European Commission Competition Directorate in relation to intermediation bias in favour of Google for Jobs, see <https://www-telegraph-co-uk.cdn.ampproject.org/c/s/www.telegraph.co.uk/technology/2019/08/13/google-exploiting-search-monopoly-dominate-job-recruitment-sector/amp/>

<sup>16</sup> [https://unternehmensrecht.univie.ac.at/fileadmin/user\\_upload/i\\_unternehmensrecht/Lehre/WS\\_2017-18/Kurse/Schuhmacher/Google\\_Streetmaps.pdf](https://unternehmensrecht.univie.ac.at/fileadmin/user_upload/i_unternehmensrecht/Lehre/WS_2017-18/Kurse/Schuhmacher/Google_Streetmaps.pdf). There have also been at least three other actions in the United States, all against Google, alleging intermediation bias, see Mays (2015).



earlier cases of tying and bundling against Microsoft.<sup>17</sup> We think it likely that further cases relating to both vertical leveraging in general and biased intermediation in particular will be brought in the future, either in Europe or the US, or both.<sup>18</sup> The focus of this report is not with any particular case but with the general principles and insights which might be derived from thinking about cases of this kind. We also expect that biased intermediation will become an even greater concern as a result of trends in customer interfaces. We have already seen that the migration of consumer attention away from large PC screens to smartphone screens has narrowed the options that can be displayed. Voice activated interfaces, which may replace screens in the future, will take this further. Devices using such interfaces generally offer only one or two options in response to a search query.<sup>19</sup> This means the consumer's attention is likely to become even scarcer, and hence more valuable.

To understand the challenges of developing remedies for vertically integrated digital platforms, it is important to recall the features we introduced earlier. An intrinsic function of many digital platforms is to enable transactions by giving prominence to options or results which are judged most likely to fulfil a consumer's needs and by excluding or demoting others. This means that a scarce and rivalrous resource is allocated by the intermediary using rules which need to ensure that the results are relevant for and valued by the consumer, but which may also reflect criteria such as the payment received by the platform or the affiliation of the business in question.<sup>20</sup> Non-discrimination is, in this sense, antithetical to the intermediation function that is performed by most digital platforms. Calls to apply generic 'non-discrimination' rules to the matching activities of digital platforms, without further elaboration of what that might actually mean, reveal a failure to appreciate the nature of the challenge which competition authorities and regulators will face.

Concerns about biased intermediation by vertically integrated digital platforms cannot, therefore, easily be remedied by simply prohibiting the allocation of scarce resources or the ranking of results. The challenge is to find remedies which allow the digital platform to continue to perform its virtuous functions (filtering, organising and ranking data to produce good matches for consumers) whilst at the same time preventing anti-competitive practices. One remedy would involve removing the incentive to intermeditate unfairly by separating the digital platform from its affiliate businesses. Such structural separation has often been proposed as a means of addressing a variety of concerns about dominant digital platforms, of which biased intermediation by the digital platform

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<sup>17</sup> Case AT. 37792 [http://ec.europa.eu/competition/elojade/isef/case\\_details.cfm?proc\\_code=1\\_37792](http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=1_37792) and Case AT.39530 [http://ec.europa.eu/competition/elojade/isef/case\\_details.cfm?proc\\_code=1\\_39530](http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=1_39530)

<sup>18</sup> There have, for example, been a number of reports which accuse Amazon of engaging in biased intermediation and that this accounts for the rapid growth of its various private label businesses, see for example, the Capitol Forum (2016), 'Amazon: By Prioritizing its Own Fashion Label Brands in Product Placement on its Increasingly Dominant Platform, Amazon Risks Antitrust Enforcement by a Trump Administration' at (2018) <https://thecapitolforum.com/wp-content/uploads/2016/07/Amazon-2016.12.13.pdf>; Kahn (2017) also cites claims that Amazon promotes its 'Fulfillment by Amazon' service by promoting retailers who use it in its listings: "sellers who use FBA have a better chance of being listed higher in Amazon search results than those who do not, which means Amazon is tying the outcomes it generates for sellers using its retail platform to whether they also use its delivery business"; Creswell, 'How Amazon steers shoppers to its own products', New York Times, 23 June 2018.

<sup>19</sup> See <https://www.cnet.com/news/do-humans-choose-what-products-get-amazons-choice/> for discussion of 'Amazon's choice', which allows Alexa to recommend a product or supplier in response to new queries when no previous purchase history is available. The criteria for selection as Amazon's choice are unclear. Bain & Co found that the 'Amazon's Choice' product is offered in most cases (with a disproportionate share of Amazon products being 'Amazon's choice'), but in 5% of cases it would be a sponsored product, although this would not be apparent to the consumer, see <https://www.bain.com/insights/retail-holiday-newsletter-2017-issue-2>

<sup>20</sup> Cremer et al. argue that such constraints lead digital platforms to regulate both their own conduct and the conduct of those using the platform, but that such rules should only be those that are necessary for the functioning of the platform, just as the rules of sporting authorities should govern participation without restricting competition between qualifying participants pp.62-63.





is one.<sup>21</sup> However, such remedies have been applied in only very few cases to date and their implementation can present formidable challenges.<sup>22</sup> Given this, we might expect rather more to have been written about other, behavioural, remedies which might have a greater prospect of being implemented.<sup>23</sup> The aim of this study is to begin to fill that gap.

The rest of the report is organised as follows:

- ❖ In the next Section 2, we examine in more details the incentives which digital platforms have to vertically integrate into related markets and how and why they might then leverage their dominance in one market into others by engaging in biased intermediation.
- ❖ In Section 3, we first introduce the two main types of decision rule which digital platforms employ to direct a consumer's attention and generate matches. We distinguish between 'factor-based' intermediation mechanisms, which generally involve algorithms generating results in accordance with rules which are established by the platform itself, and 'payment-based' mechanisms which instead rely on prices to allocate scarce resources, generally to those businesses that value them most.
- ❖ In Section 4, we then consider the range of potential remedies that are available to policymakers seeking to ensure that vertically integrated platforms do not engage in biased intermediation. These include structural separation, regulating the 'factor-based' intermediation mechanisms and designing and overseeing 'payment-based' intermediation mechanisms.
- ❖ In Section 5, we draw some key conclusions from our discussion of remedies and make recommendations, including changing the institutional arrangements and processes which policymakers use when developing remedies for digital platforms.

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<sup>21</sup> See Kahn (2017); Wu (2018).

<sup>22</sup> Notably, the Indian Government (rather than the competition authority), which has prohibited Amazon from making its own sales on its Marketplace e-commerce platform, see Reuters, 'India tightens e-commerce rules, likely to hit Amazon, Flipkart', 26 December 2018 and Government of India Ministry of Commerce and Industry (2018).

<sup>23</sup> A substantial literature now exists on the application of remedies in the Microsoft cases. These cases did not relate to 'biased intermediation' but the exclusive bundling of Microsoft's dominant Windows operating system with Microsoft applications (media player and browsers) which competed with third party applications. However, similar arguments were advanced by Microsoft, who argued that consumers wanted the convenience of a pre-installed browser or media player that could be used as soon as the PC was booted up, rather than having to choose and download applications before being able to use them. See Sanad A. (2014) and Economides and Lianos (2010) who conclude "*We believe that it is important to think seriously about potential remedies before litigation begins*".

02

**POSSIBLE REASONS FOR  
AND LIMITS TO BIASED  
INTERMEDIATION**



## 2. Possible reasons for and limits to biased intermediation


### 2.1. Preliminaries: the attention economy and the platform business model

Realising that an important competitive bottleneck in the digital economy is consumers' attention, an essential purpose of platforms is to aggregate the attention of many end consumers by organising products, services, content or other commercial or non-commercial offers in an effort to facilitate the search process (for products, services or information) of consumers. Examples are search engines, booking platforms, social media platforms or shopping platforms. Even if a platform is regarded as a 'gatekeeper', such as in the case of app stores or operating systems, it is likely going to compete for attention with alternative platforms (app stores or operating systems) on the basis of how well its content and services are organised. Once a platform has aggregated enough attention, i.e. when it is considered to be 'useful' by a large number of consumers, then it can monetise its role as 'information gatekeeper' by selling third-parties access to the consumers' attention.

From an economic perspective, the first important observation is that a non-vertically-integrated, independent digital platform generally has an incentive to create good matches between consumers and the intermediated business (products, services, content). Put simply: the better the match the platform generates, the higher the economic value that the platform creates, the more value there is to extract for the platform, hence the higher the platform's profit. In this regard, it is of first order priority for the (independent) platform to fulfil its role as intermediary between consumers and businesses in the best possible way.

However, in practice, this economic incentive to create good matches likely interacts with several other economic influences, such as strategic trade-offs arising, e.g. from the fact that some intermediated products are more profitable for the platform, or due to the existence of a complement on the platform (e.g. paid vs. organic clicks), and economic frictions (transaction costs) such as switching costs (due to lack of interoperability), behavioural biases and asymmetric information (e.g. on the true 'quality' of the platform's intermediation or the true value of personal data) which prevent users from multi-homing between different platforms or from exploring different options. Similarly, as argued above, economies of scope and scale (e.g. in data aggregation and analytics) exist, that may give a significant incumbency advantage to an established platform. This can allow the platform to drift away from the ideal of striving for maximisation of consumers' surplus and hence to extract consumers' rents. But the intermediation service that the platform offers must still take into account the competitive pressure for attention created by alternative platforms (whether they already exist or are yet to be established) and must also be valued enough by consumers such that they do not allocate their attention elsewhere. By and large, independent platforms' interests are thus aligned with maximising consumers' surplus, because consumers' continued attention is the foundation for their business models.

Hence, as retaining consumers' attention is key, platforms' rent extraction rather occurs on the other market side, i.e. from the content, service and product providers, or advertisers, who need to follow the (few) digital platforms that aggregate consumers' attention. In other words, as long as the platform receives consumers' attention, it enjoys a position of economic strength vis-à-vis the



businesses that are being intermediated, and which can potentially be abused. This is what is referred to as a competitive bottleneck in the platforms' literature.<sup>24</sup>

While there are several means for the platform to extract rents from the business side, we wish to highlight two revenue sources that are directly linked to the intermediation service (unlike banner advertisements, for example): revenue shares and the selling of prominent placement for intermediated goods, content or services.

### **Revenue shares**

Platforms often demand a commission fee or revenue share for each trade or match that has been successfully intermediated. Examples are revenue shares on e-commerce platforms, booking platforms, price comparison platforms, or app stores. Typically, the commission fee is applied in a non-discriminatory manner, i.e. the same conditions apply to every business, independent of its identity. For example, Apple and Google each demand a 30% revenue share in their respective app stores, although there are some nuances in the details (e.g. Apple and Google command a lower revenue share of 15% for apps with long term subscriptions; Microsoft demands a 30% revenue share only for games and 15% otherwise for apps accessed through its app store).<sup>25</sup> Thereby, the size of the revenue share may be seen as an indication of the relative bargaining power that the platform has vis-à-vis the businesses, and the level of competition between comparable platforms. For example, the launch of a new PC games platform by Epic has ignited strong competition with the incumbent platform Steam by Valve. Instead of the 30% revenue share currently demanded by Valve, Epic demands only a 12% revenue share,<sup>26</sup> which has put strong competitive pressure on Valve.<sup>27</sup>

### **Prominent placement**

Platforms often sell prominent placement, e.g. in the search results, against some additional payment by the intermediated business. This payment for prominence is different from a commission fee or a revenue share. It often applies in addition to a revenue share. Recall that platforms generally have an incentive to create good matches in the eye of the consumer, because this secures consumers' attention and enables them to take a revenue share from a successful match. If, however, a platform allows paying for prominence, then this potentially has an impact on the quality of the intermediation process. Products, services or content that, by the platform's default ranking algorithm, would have been less visible, supposedly because they are a worse match, can now buy into a more visible position, potentially reducing the quality of the match. Paying for prominence can come in different forms, such as 'sponsored search results', 'partnership programs' or as the platform's 'recommended product'. In many cases, the payment for a prominent placement is not fixed, but determined dynamically in an auction.

In this context, it is important to highlight that selling prominent placement must not necessarily be bad for the quality of the platform's intermediation. It can even increase the quality of the intermediation. We elaborate on this seemingly counterintuitive argument below.

First, precisely because platforms generally have an incentive to produce good matches, they take the 'quality' of the match also into account when offering a pay-for-prominence scheme. The final

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<sup>24</sup> See, e.g. Armstrong, M., & Wright, J. (2007) Two-sided markets, competitive bottlenecks and exclusive contracts. *Economic Theory*, 32(2), pp. 353-380.

<sup>25</sup> See <https://9to5mac.com/2019/03/06/microsoft-store-revenue-share/>

<sup>26</sup> See <https://www.theverge.com/2019/4/16/18334865/epic-games-store-versus-steam-valve-pc-gaming-console-war-reimagined>

<sup>27</sup> See <https://www.vg247.com/2019/08/28/steam-business-model-valve-cut-unrealistic-today-says-ubisoft/>



placement is then determined by a quality-weighted bid for prominent placement, and not by the raw bids alone. Businesses of lower 'quality' must therefore bid more than a business with higher 'quality' to achieve the same level of prominence on the platform. For example, major search engines such as Google, Yahoo and Bing all compute a quality score for each website. This score includes factors like the expected click-through-rate (a measure of relevance) and the landing page quality and loading time. The quality score is multiplied by the raw bids that this website has submitted in order to receive the weighted bid, which is finally used to determine the website's rank in the sponsored search results.<sup>28</sup>

Second, the theoretical economics literature has shown that bidding for prominence can facilitate a good matching process. This is because the businesses that have a higher quality expect to make larger profits from a match, and thus tend to bid more than low quality businesses in a pay-for-prominence scheme. This is a fairly robust result in the theoretical literature (see CERRE's 2017 Report on "Internet Platforms and Non-Discrimination"<sup>29</sup> as well as Krämer and Schnurr, 2018<sup>30</sup> for an overview). Moreover, each business may be able to assess its quality (which is to some extent private information) better than the platform, such that, through bidding for prominence, a natural sorting according to quality occurs (see e.g. Athey & Ellison, 2011; Chen & He, 2011; Chen & Zhang, 2018).<sup>31</sup> In other words, bidding for prominence can help businesses to overcome the possible imperfection of the ranking algorithm in determining quality and fit. However, this comes at the cost of having to share even more revenues with the platform through the auction. Nevertheless, while this affects how the surplus from the matchmaking process is divided between the businesses and the platform, from the perspective of the consumers, auctioning off prominent placement in a platform can increase the matching quality, and may thus increase consumer surplus. At least three important caveats apply in this context.

First, it was implicitly assumed that the products, services and content to be intermediated compete mainly with respect to quality. This is generally true for information intermediation, such as in general search, or for intermediation with respect to free apps and services, or products of similar price. However, if offerings are of comparable quality, and rather compete in price, then the theoretical economics literature has shown that paying-for-prominence will rather put the high-priced businesses in a more prominent position, which would be to the detriment of consumers.<sup>32</sup> This result depends to some extent on consumers having search costs, so that they cannot assess the price of offerings cost and effortlessly. If, however, businesses compete in both the quality and the price dimensions, the positive results of the quality competition tend to outweigh the negative results of the price competition, leaving the above conclusions intact (de Cornière & Taylor, 2017).<sup>33</sup> Indeed, Yang & Ghose (2010) show empirically that a 'high quality' website, measured by

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<sup>28</sup> See, for example, [https://ads.google.com/intl/en\\_uk/home/resources/improve-quality-score/](https://ads.google.com/intl/en_uk/home/resources/improve-quality-score/) in Google's Quality Score.

<sup>29</sup>Krämer, J., Schnurr, D. & de Streel, A. (2017) Internet Platforms and Non-Discrimination. CERRE Report. Available at: <https://cerre.eu/publications/internet-platforms-non-discrimination>

<sup>30</sup> Krämer, J., & Schnurr, D. (2018). Is there a need for platform regulation in the EU?. Telecommunications Policy, 42(7), pp. 514-529.


<sup>31</sup> Athey, S., & Ellison, G. (2011) Position auctions with consumer search. The Quarterly Journal of Economics, 126(3), 1213-1270.

Chen, Y., & He, C. (2011) Paid placement: Advertising and search on the internet. The Economic Journal, 121(556), F309-F328.

Chen, Y., & Zhang, T. (2018) Intermediaries and consumer search. International Journal of Industrial Organization, 57(1), pp. 255-277.

<sup>32</sup> See, again, Krämer, Schnurr & de Streel (2017) and Krämer & Schnurr (2018) for an overview of the economic literature.

<sup>33</sup> de Cornière, A., & Taylor, G. (2017) A model of biased intermediation. Working Paper. Available at [https://www.tse-fr.eu/sites/default/files/TSE/documents/doc/wp/2017/wp\\_tse\\_753.pdf](https://www.tse-fr.eu/sites/default/files/TSE/documents/doc/wp/2017/wp_tse_753.pdf)



click-through-rates, frequently appears high both in the organic listings, and the sponsored listings, and that the listings correlate with each other.<sup>34</sup>

Second, in the frequently observed context where the platform displays organic placement and sponsored or paid for placements side-by-side, the economic literature has found that the platform may have an incentive to deliberately distort the quality of the 'organic' intermediation (see e.g. White, 2013).<sup>35</sup> That is the platform may place some businesses less prominently on purpose, in order to induce these businesses to buy sponsored placement. In effect, this may not result in a lower quality of the platform's intermediation and thus of consumers' welfare, because the deliberate distortions in the organic placement may simply be corrected through more prominent sponsored placements. But it does lead to a shift in welfare from the intermediated businesses to the platform. Again, the extent to which a platform can do this is an indicator of relative bargaining power of the platform vis-à-vis the businesses.

Third, a non-integrated platform may have incentives to bias intermediation, at least once in a while, in order to increase its bargaining power vis-à-vis the independent businesses (see e.g. Bourreau & Gaudin, 2018; Eliaz and Spiegler, 2011; Hagiu & Jullien, 2011; Hunold et al., 2019).<sup>36</sup> By deliberately diverting demand away from the best matching business, the platform is in a stronger position to negotiate revenue shares or prices for prominent placement. Hagiu & Jullien (2011) show that a search diversion away from the best match is likely to lower the prices of the intermediated businesses in order to compete for attention, which in turn increases the surplus that consumers can obtain from platform participation over the longer term. Thus, diverting search once in a while and lowering prices of the intermediated businesses (but not so often as to degrade the consumer experience to the point where they abandon the platform altogether) can bind consumers even more to the platform and increase the platform's bargaining power vis-à-vis the businesses. By doing so, the platform can encourage businesses to buy prominence, which would make consumers' search process more predictable for them, and thus allow these businesses to raise prices again. Taken together, the overall impact of such search diversions on consumer surplus are therefore ambiguous.

## 2.2. Reasons for the emergence of vertically integrated platforms

The incentive of platforms to provide a high quality of intermediation (i.e. to create valuable matches for consumers) in order to continually secure consumers' attention does not generally go away for vertically integrated platforms; but additional incentives arise that may lead to a greater or lesser bias from the platform regarding its own affiliated business downstream (de Cornière & Taylor, 2014).<sup>37</sup> Indeed, on the one hand, the platform has an incentive to favour its own affiliated business, possibly to the detriment of consumers. But, on the other hand, the integrated platform internalises more the impact of bias on consumer demand, and therefore also has an incentive to

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<sup>34</sup> Yang, S., & Ghose, A. (2010) Analyzing the relationship between organic and sponsored search advertising: Positive, negative, or zero interdependence? *Marketing Science*, 29(4), pp. 602-623.

<sup>35</sup> White, A. (2013) Search engines: Left side quality versus right side profits. *International Journal of Industrial Organization*, 31(6), pp. 690-701.

<sup>36</sup> Bourreau, M., & Gaudin, G. (2018) Streaming Platform and Strategic Recommendation Bias. CESifo Working Paper No. 7390. Available at: [https://www.econstor.eu/bitstream/10419/191415/1/cesifo1\\_wp7390.pdf](https://www.econstor.eu/bitstream/10419/191415/1/cesifo1_wp7390.pdf)

Hagiu, A., & Jullien, B. (2011) Why do intermediaries divert search?. *The RAND Journal of Economics*, 42(2), pp. 337-362.

Hunold, M., Kesler, R., & Laitenberger, U. (2019) Hotel rankings of online travel agents, channel pricing and consumer protection, *Marketing Science*, forthcoming. Working paper available at <https://ideas.repec.org/p/zbw/dicedp/300.html>

<sup>37</sup> De Cornière, A., & Taylor, G. (2014) Integration and search engine bias. *The RAND Journal of Economics*, 45(3), pp. 576-597.



reduce any pre-existing bias. In theory, either effect can dominate (see de Cornière & Taylor, 2014). Platforms could avoid these additional incentives to bias by refraining from vertical integration. To the contrary, they tend to increase their level of vertical integration over time, a process sometimes referred to as platform envelopment (Eisenman, Parker & van Alstyne, 2011).<sup>38</sup> Next to standard efficiency reasons for vertical integration (such as economies of scale and scope), in the present context two strategic reasons for vertical integration seem especially noteworthy: extracting more profit from a profitable downstream business and foreclosing an emerging platform.

### ***Vertical integration as a means to extract more profit from a profitable downstream business***

For very successful individual products, content, or services, the revenue share arrangements referred to above may not be optimal and the platform may then be able to capture a greater share (i.e. all) of the value by participating directly in the relevant market itself. The platform's position as an intermediary through which all transactions flow mean that it can screen very effectively which products, content and services are successful, without having to bear the same entrepreneurial risks as other businesses which do not have access to the same data and do not perform the same intermediary function. The platform could extract more of the business' surplus if it were able to demand a higher fee from those that are more successful, although this would still only represent a share of the total profits and it is not clear that the platform would always be successful in such negotiations. However, in many circumstances, this may not be the platform's preferred option, e.g. because it would greatly complicate the tariff arrangements it had and expose it to accusations from businesses of anti-competitive practices. A better alternative for the platform in these circumstances may therefore be to itself become the supplier of the product, content or service.


### ***Vertical integration as a means to foreclose an emerging platform***

The biggest threat to a platform is to be superseded by another platform, which then draws the attention of the users instead. For example, a price comparison platform which is being intermediated through a general search platform may well become the new gateway platform for product related searches in the future. Consumers would then not use the general search platform as an entry point for product-related searches anymore, and the price comparison service would attain the intermediation power for this segment of the search market. Similarly, an online map service may easily become the new dominant platform for location-based searches (e.g. of local businesses), an online health service for health-related searches, and so on and so forth. Consequently, a dominant platform needs to prevent a downstream content or services provider from becoming the next platform itself. In fact, a well-known strategy to launch a new platform is to piggyback on the success of another platform. For example, PayPal strategically chose eBay to gain prominence and YouTube chose Myspace as a launching platform.<sup>39</sup> In order to fight such rival platform envelopment, a platform may choose to vertically integrate, either by merging with the piggybacking platform (e.g. as in the case of PayPal and eBay) or to launch a similar platform (e.g.

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<sup>38</sup> Eisenmann, T., Parker, G., & Van Alstyne, M. (2011). Platform envelopment. *Strategic Management Journal*, 32(12), pp. 1270-1285.

<sup>39</sup> Compare Parker, G. G., Van Alstyne, M. W., & Choudary, S. P. (2016). *Platform revolution: How networked markets are transforming the economy and how to make them work for you*. WW Norton & Company.



as in the case of Google Shopping or Apple Maps). This is what is known as a foreclosure attack in the platform envelopment literature (Eisenman, Parker & van Alstyne, 2011).<sup>40</sup>

### 2.3. Biased intermediation in vertically integrated platforms

A business that is vertically integrated with the platform has one important advantage over an independent business. The platform can immediately impact the demand that the integrated and the non-integrated business receive by biasing the intermediation towards their own, affiliated content, product or service, rather than towards the rival's, everything else being equal. In this context, it is important to highlight again what is meant by 'biased intermediation'. Every intermediation necessarily needs to filter suitable matches and to present them in a given order, either explicitly through a search rank, or implicitly through placing the matches more or less prominently on the results page, considering possible behavioural biases. It should be clear by now that biased intermediation can be done in various ways, especially through making the own affiliated business more prominent in the organic search results, and/or in the sponsored search results, or by introducing new categories such as 'recommended results' or a one-box in between the sponsored and the organic search results. Clearly, such intermediation and matching efforts can be prone to errors, and the quality of the matching process is likely to depend on the data that is available to the platform. Nevertheless, we would consider an intermediation 'unbiased' if the platform presents the possible matches such that it maximises the value of the expected match, especially from the point of view of the user. However, unbiased intermediation does not mean that businesses may not be ranked, and that, due to errors, inferior matches always obtain less prominent placement than superior matches.

The problem lies in the detection of biased intermediation, however. The optimal 'design' of the bias can be very complex, since several interactions and behavioural effects have to be considered. Therefore, platforms usually run extensive field experiments on their own websites, where every change is implemented for a treatment group, and then compared to a baseline group which did not see the change (so-called A/B-testing). The change is implemented for all users only if it has the desired effects. Therefore, biased intermediation will often not just be hard-coded into the algorithms, or result in a new box on the results page, where, arguably, it can be detected quite easily. Instead, it will occur in more subtle ways such as through correlations with seemingly objective characteristics or minute differences in the appearance of certain listings. For example, even if a platform would display its own listing side-by-side with the independent listing, then, it will very likely matter whether the own listing is displayed to the left or to the right due to behavioural biases.<sup>41</sup> And, even worse, whether the bias is for the left or the right side will likely be different in different cultural societies: societies in which the direction of reading is from left to right tend to have a left-bias, whereas societies in which the direction of reading is from right to left (e.g. in Arabic) tend to have a right-bias.<sup>42</sup> Taken together, this highlights that the detection of all but the crudest biasing interventions may be very difficult.

Moreover, biased intermediation is likely to be even more difficult to detect *ex-post* than at the time it occurs. This is because businesses that are given an advantage in the intermediation process are likely to improve their quality relatively more and to become a better 'unbiased' match

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<sup>40</sup> Eisenmann, T., Parker, G., & Van Alstyne, M. (2011). Platform envelopment. *Strategic Management Journal*, 32(12), pp. 1270-1285.

<sup>41</sup> See e.g. Ryan, M., Krucien, N., & Hermens, F. (2018) The eyes have it: Using eye tracking to inform information processing strategies in multi-attributes choices. *Health economics*, 27(4), pp. 709-721.

<sup>42</sup> See, e.g. Spalek, T. M., & Hammad, S. (2005) The left-to-right bias in inhibition of return is due to the direction of reading. *Psychological Science*, 16(1), pp. 15-18.





as a result. For example, a currently inferior application would have higher incentives to invest in quality after it has been given a demand boost. In the economic literature, this is known as the 'scale effect' of biased intermediation (de Cornière & Taylor, 2017;<sup>43</sup> Krämer & Zierke, 2017).<sup>44</sup> As a higher ranking position results in more demand, the costs of quality investments can be spread among more users, hence leading to economies of scale. Similar effects may arise (i) due to network effects, which render a service more valuable the more it is used; and (ii) due to data quality effects, which allows a business to improve its service more, because it has received more user and usage data. The consequence will be that any *ex post* examination of the results being presented by an intermediary platform will need somehow to distinguish between top ranked businesses which have achieved that position without intermediation bias, and those which have achieved the same position as a result of such bias.<sup>45</sup> Needless to say, this is very difficult to do in practice.<sup>46</sup>

It is also important to note again that the incentive of a platform to produce good matches for consumers, as discussed above, is still at work. If a platform significantly lowered its intermediation quality in order to engage in biased intermediation, for example by always recommending its own products first independent of quality, then it may risk to lose consumers' attention and jeopardise its reputation as a 'useful' intermediary. The extent to which this limits the incentive to bias intermediation will crucially depend on the specifics of the market in which the platform operates, and can be very different across different platforms. However, the need to ensure that any bias does not degrade the consumer experience to such a degree is likely to mean that it will often also be difficult for public authorities or businesses to detect.

## 2.4. Vertical integration in network industries vs. platform industries

The discussion of potential issues with biased intermediation in vertically integrated platform markets may prompt consideration of how this relates to issues of vertical integration in other network industries.

For example, in the telecommunications industry, there seems at first sight to be a similar issue with a vertically integrated incumbent that denies independent rivals access to a vital upstream resource, i.e. the last-mile network in this case. There is a long-standing expertise with regulation and associated remedies in this context. In Europe, a form of access regulation is typically in place, where the telecom provider that has the demand of the user will also receive access to the network at regulated (non-discriminatory) terms. However, access regulation in network industries is different in at least one important respect. Here, as well as in other network industries with a vertically integrated incumbent, competition for users takes place downstream. In other words, on the demand side, there is a level playing field between the vertically integrated firm and the non-integrated firms. However, non-integrated firms eventually require access to the integrated firm's upstream resource in order to be able to fulfil the service that they have offered to consumers. This

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<sup>43</sup> de Cornière, A., & Taylor, G. (2017) A model of biased intermediation. Working Paper. Available at [https://www.tse-fr.eu/sites/default/files/TSE/documents/doc/wp/2017/wp\\_tse\\_753.pdf](https://www.tse-fr.eu/sites/default/files/TSE/documents/doc/wp/2017/wp_tse_753.pdf)

<sup>44</sup> Krämer, J., & Zierke, O. (2017). From Net Neutrality to Application Store Neutrality? The Impact of Application Stores' Ranking Policies on Application Quality and Welfare. Working Paper. Available at <https://ssrn.com/abstract=2943280>

<sup>45</sup> This seems analogous to the 'cellophane fallacy' which gives rise to the task of distinguishing between an observed price that is a monopoly price and one that is a competitive price.

<sup>46</sup> For an interesting example of such a discussion, see <https://www.wsj.com/articles/apple-dominates-app-store-search-results-thwarting-competitors-11563897221>



means that the vertically integrated firm's strategic market position lies in controlling the production side, but not in controlling the demand side.

On the contrary, a digital platform has the ability to deny its downstream rivals' demand (as it controls consumers' attention), while it often does not have the ability to deny access to a vital upstream resource that is required to offer its service generally (because it often does not control other production inputs).<sup>47</sup> This means that, unlike the network industry firms, the platform's strategic market position lies predominantly in controlling the demand side but usually not in controlling the production side. As a result, remedies which may be applied in traditional vertically integrated network industries may not be relevant to vertically integrated platform markets.

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<sup>47</sup> This does not preclude the possibility that platforms, additionally, have control over important input factors for downstream competitors. For example, de Stree and Bourreau (2019) (de Stree, A. and Bourreau, M. 2019. Digital Conglomerates and EU Competition Policy. Available at <http://www.crid.be/pdf/public/8377.pdf>) identify data, skilled staff and computational power as key sharable inputs in digital markets. For such inputs, access regulation may be considered in some circumstances, but this is beyond the scope of this report.

03

**FACTOR-BASED VS.  
PAYMENT-BASED  
INTERMEDIATION  
MECHANISMS**



### 3. Factor-based vs. payment-based intermediation mechanisms

As highlighted in Section 2, independent platforms generally have an incentive to create good matches for users. In this case, the interests of the platform and that of users are aligned. However, in the case of vertically integrated platforms, there exists an additional incentive to bias the matchmaking process towards their own products, content or services, possibly driving a wedge between the platform's and users' alignment of incentives. Depending on the circumstances of the case, remedies may be required to restore the platforms' incentives to facilitate good matches, as if it were not vertically integrated, i.e. independent of the identity of the downstream business.

Before we evaluate different remedies, it is useful to introduce two general types of mechanisms that platforms typically employ to allocate user's attention to intermediated businesses. We refer to these as factor-based and payment-based mechanisms and describe them in turn. The main difference between them is that *payment-based mechanisms are influenced by direct or indirect payments from the businesses to the platform*, whereas *factor-based mechanisms rely on observable characteristics*. We have already noted that platforms usually employ hybrid mechanisms that include both factor-based and payment-based elements. Nevertheless, it is useful to consider each separately, since they represent the end points of a possible spectrum of possibilities.

#### **Factor-based mechanisms**

Factor-based intermediation mechanisms are based on explicit managerial or technical decisions on how to present and order content, products or services of the intermediated businesses on the platform, as well as on observable (by the platform) characteristics or 'factors', such as 'quality' or 'fit'.

A prototypical example is how the organic search results are derived and displayed on a given platform. Observable characteristics that influence the organic search results encompass not only the keyword or search phrase itself, but also data about the seeker, such as i) the location where the search was initiated (e.g. derived from the IP address), ii) the history of previous searches (e.g. re-attributed through a browser cookie or browser fingerprinting), iii) the software and hardware configuration used (e.g. identified through submitted meta-information) and iv) other types of personal information like age and gender (e.g. derived from the users' account information). In addition, observable characteristics about the intermediated business are used such as i) quality, ii) price, iii) time-relevance and iv) presentation of the offer, v) ratings or vi) other characteristics like the hyperlink structure in which the content is embedded (known as page-rank). Moreover, the behaviour of other users after similar searches is usually considered via click-through rates or clickstreams. This is far from being a complete list of the possible and existing implementation. There are numerous ways in which observable characteristics can be collected, used and analysed: for example, how the data is cleaned, which algorithms are used, and how the algorithms are tuned and tweaked. Google Search, for example, is believed to be based on around 200 factors.<sup>48</sup> In fact, the lack of transparency on how exactly a ranking is devised for all but the integrated firms has also been put forward as a possible source of intermediation bias. Thereby, bias occurs because integrated firms are given an informational advantage to optimise their offers in order to appear high in the search results.

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<sup>48</sup> <https://backlinko.com/google-ranking-factors>



Literally thousands of small managerial and technical decisions have to be made in order to derive a factor-based intermediation and presentation. Digital platforms will usually test new ideas and managerial decisions in a field experiment before they implement it in practice. Algorithms change constantly, based on continued experimentation and innovation by platforms. Large platforms such as Google Search are believed to make (small) managerial changes to their search algorithm and presentation around 1,000 times a year, although only a fraction of these become known publicly.<sup>49</sup>

While, for the purpose of this report, it is not necessary to know exactly how the organic search results are derived, it is important to realise that, in digital platforms, managerial decisions about the intermediation mechanisms are usually made very frequently. Moreover, many of these decisions provide the basis on which platforms may compete and are therefore a business secret. In the context of search engines, for example, a whole industry has developed around search engine optimisation (SEO), whose core mission is to reverse engineer how exactly a given search engine transforms observable characteristics into a search results page in order to help intermediated businesses obtain better rankings or results. As mentioned above, vertically integrated businesses can do without such services, because they are likely to possess accurate information about the actual ranking factors being used by the integrated platform.

### *Payment-based mechanisms*

Payment-based intermediation mechanisms rely predominantly on monetary or non-monetary transfers between the business and the platform that influence how to present and order the products, service or content of the intermediated businesses.

A prototypical example is sponsored search results. In order to determine which businesses are listed in the sponsored search results, and in which order, the platform runs an auction for each search query (at the time where the search is conducted). In a pure payment-based mechanism, the business that has offered the highest payment to the platform for this search phrase will receive the top position; the business that has submitted the second highest payment, the second highest position, and so on; until all available positions are filled.<sup>50</sup>


In theory, it is conceivable that a platform may rely on a pure payment-based mechanism to determine the order in which businesses are presented. Indeed, as indicated before, this must not necessarily yield bad matches for consumers, as businesses with a high quality are likely to be willing to bid more and will therefore attain a higher ranking position (see Section 2.1). However, in practice, payment-based mechanisms are usually moderated by factor-based mechanisms in order to make it costly for businesses which, under a pure factor-based mechanism, would be considered as a bad match, to attain a prominent position. For example, recall from Section 2.1 that all major search engines compute a quality score which is multiplied by the bid in order to determine the ranking position, and therefore the highest bidder might not be listed first.

Payment-based mechanisms must not necessarily be based on auctions, nor must the payment be made in money. Auctions are simply an elegant way for many platforms to determine the price dynamically and to achieve an efficient allocation of the scarce resource (i.e. consumers' attention). However, platforms may also demand a static price, for example to access a 'partnership program', whose members are then presented more prominently in results. Likewise, a platform may grant more prominent placement to those businesses that share more data with it.

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<sup>49</sup> See <https://moz.com/google-algorithm-change>

<sup>50</sup> As we will discuss below, usually payment-based mechanisms are not employed in this pure form, but in a hybrid form, where they also take ranking factors into account.



An example is Google's Accelerated Mobile Pages (AMP) project, where those businesses that host their content on Google's servers – thereby allowing faster access to their content but, as an intended side-effect, also allowing Google more detailed access to how the content is accessed – are placed more prominently in mobile search results.<sup>51</sup>

It would be wrong to conclude that payment-based mechanisms are typically less complex than factor-based mechanisms and therefore easier to police. Payment schemes and auctions for sponsored placement have become increasingly complex over time. For example, search engines also allow businesses to place different bids not only for different search phrases, but also for different users. This is based on so-called remarketing lists, which re-identify users that have previously visited the business's website or app. In fact, the bidding process has become so complicated for businesses that, again, a whole industry has evolved around search engine marketing (SEM), whose core mission is to facilitate and optimise the bidding process in the payment-based mechanism of a platform.

### **Combinations of factor-based and payment-based mechanisms**

A given platform will typically employ factor-based and payment-based intermediation side-by-side, for example organic search results and sponsored search results. In fact, there may be a large variety of results displayed on a platform. On Amazon's UK website, for example, at the time of writing, users are presented with results marked as 'sponsored', 'best seller' or 'Amazon's choice' alongside seemingly organic search results. On a given product page, other products are displayed that have been 'frequently bought together', are 'related sponsored products', have been viewed by 'customers who also viewed this item', are 'comparable', or have been 'shopped for' by other customers. In addition, Amazon displays regular advertisements for similar products on both the results and the products page. Each of these categories represents a different intermediation mechanism in the possible spectrum of factor-based and payment-based mechanisms.

The economic interplay and effects of a combination of factor-based and payment-based intermediation mechanisms can be very complex and are, from a theoretical point of view, not well understood – at least, not by independent and publicly available research. This is in part due to a lack of availability of internal data and to the lack of ability to conduct independent experiments on large digital platforms. As a work around, researchers often rely on natural experiments, i.e. they exploit major changes that have been made to the platform, and try to scrape data from the platform. This is only a second-best approach, however, which has methodological drawbacks (e.g. selection bias, as changes have been tested and approved by the platform before they become visible; or endogeneity issues, due to missing counterfactuals). For example, Edelman & Lai (2016)<sup>52</sup> studied how the introduction of Google's *Flight Search* service, which was placed in a one-box in between the sponsored search results and the organic search results on Google's search results page, affected click-through rates. They found that this has increased the "volume of paid clicks by approximately 65% and decreased the volume of organic clicks by approximately 55%" (p. 882). However, such results are likely to be very context and case specific and would require public authorities to have access to internal data or to the experimental testbeds used by dominant platforms.

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<sup>51</sup> Officially, more prominent placement occurs not because of the additional flow of data, but because the respective webpages load faster when they are cached on Google's servers, as opposed to any of the websites' own servers. For the strategic implications, consider Krämer, J., Schnurr, D., & Wohlfarth, M. (2019). Trapped in the Data-Sharing Dilemma. MIT Sloan Management Review, 60(2), pp. 22-23.

<sup>52</sup> Edelman, B., & Lai, Z. (2016). Design of search engine services: Channel interdependence in search engine results. Journal of Marketing Research, 53(6), pp. 881-900.

04

# EVALUATION OF POSSIBLE REMEDIES



## 4. Evaluation of possible remedies

In this Section, we consider in more detail the various remedies which might be contemplated to address concerns about biased intermediation. Before doing so, it is important to exclude potential remedies that have been considered in other contexts but which we do not regard as relevant for our purposes.

We have already explained how the intermediation function performed by many digital platforms arises from the need to allocate a resource – consumers’ attention – which is both scarce and rivalrous. The ability of a digital platform to distort competition might therefore be frustrated, or at least moderated, if the source of this scarcity could be reduced or eliminated altogether. In some circumstances, it may be feasible to expand capacity to the point where allocation decisions by an intermediary are no longer required. However, we exclude this possibility. There is no reason (that we are aware of) to believe that the capacity of consumers of digital services to process information will change significantly in the foreseeable future. As noted in the introduction, new types of interfaces such as voice activation seem, if anything, likely to involve a further narrowing of the range of options that are offered to consumers.

Since the need to discriminate and to filter information – so that some options are promoted and others demoted – will remain an intrinsic feature of many digital platforms, any generic remedy which would require ‘non-discrimination’ is also excluded. The challenge, as noted previously, is to design a remedy which allows the platform to intermediate without distorting competition.

### 4.1. Structural separation

Structural separation of the vertically integrated firm is a traditional remedy to concerns about leveraging.<sup>53</sup> Most competition authorities have a well-known preference for structural remedies over behavioural remedies which risk involving them in ongoing regulatory functions and detailed oversight. Commitments to structurally separate firms have been given as remedies in some vertical leveraging cases in the traditional utility sector in Europe, notably in relation to concerns about exclusive practices in wholesale energy markets.<sup>54</sup> The District Court in the US had originally proposed the structural separation of Microsoft into an operating system company and an applications company as a remedy to tying concerns in the first Microsoft case,<sup>55</sup> although this was subsequently vacated on appeal and never implemented. Some advocates of the structural separation of dominant digital platforms also argue that it would yield other benefits, beyond those normally associated with the application of competition policy or the remedy of a specific theory of harm, although the form such a separation would take is generally not specified in any detail.<sup>56</sup>

It certainly seems clear that separating the ownership of the intermediary functions from other business activities would immediately remove the incentives of the platform to discriminate which otherwise arise from the common ownership of these businesses. It would also remove any ability on the part of the affiliated business to optimise its results on the platform by having privileged access to information about how the algorithms work. However, it would also be necessary to ensure that the separation would be sustained over time, which would likely require the imposition

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<sup>53</sup> It has been enthusiastically promoted by the OECD since 2001, with mixed results, see OECD (2016).

<sup>54</sup> See Koch et al. (2009).

<sup>55</sup> Economides (2001).

<sup>56</sup> See Wu (2018). Some advocates (often citing the AT&T case) argue for the horizontal separation of a dominant digital platform so as to create a number of competing (but still vertically integrated) platforms. Separating Microsoft into a series of ‘Baby Bills’ was also proposed by some in that case.





of lines of business restrictions upon the dominant digital platform in order to prevent them from re-entering the relevant markets for some future period. The key assets which a digital platform holds and which may enable it to realise economies of scope by venturing into new markets (such as the data which it derives from its intermediary functions) would remain unaffected by separation, and so it is reasonable to suppose that the incentives to venture into new markets would remain similarly unaffected.

Imposing lines of business restrictions and limiting entry are not generally attractive propositions for competition policymakers. As discussed above, the entry of digital platforms into downstream markets may reflect economies of scope, business model innovation and other efficiencies which, provided the platform faces sufficient competition in the downstream market, will benefit consumers. Forcing digital platforms to withdraw from these markets and divest their assets would deny consumers these benefits. As Edelman notes:

“[...] it would be untenable to ask Google to disavow new businesses. It is hard to imagine a modern search engine without maps, news, or local search (among other functions largely absent from core search a decade ago). If legal intervention prevented Google from entering these fields, users might lose the useful functions that stem from integration between seemingly disparate services.”<sup>57</sup>

Competition authorities would also be likely to face significant challenges in developing the counterfactuals that would be required to assess whether a market from which the dominant digital platform was excluded would perform better or worse for consumers (as opposed to competitors) than a market in which it participated, either on anti-competitive terms arising from the application of biased intermediation by the platform itself or on better terms assuming that some alternative, behavioural remedy could be found to mitigate the bias. These will be difficult assessments which will turn on the specific facts of each case.

Structural separation remedies present a number of further practical issues, some of which may be more acute if they are to be applied to digital platforms. The first of these relates to the relevant legal thresholds which proponents of structural separation would need to meet in order for the remedy to be viable. In EU law, “*structural remedies can only be imposed either where there is no equally effective behavioural remedy or where any equally effective behavioural remedy would be more burdensome for the undertaking concerned than the structural remedy*”.<sup>58</sup> The European Commission has recently concluded that its vertical leveraging concerns in the Google Shopping case could be adequately addressed by the implementation of behavioural remedies, which we consider in further detail below. It seems likely that the Commission would need to demonstrate why behavioural remedies would not also address its concerns in other circumstances, and how those circumstances differed from the Google Shopping case.<sup>59</sup>

The second set of practical challenges involves the need to define the economic boundaries between the separated businesses and the allocation of assets between them. It is very difficult, in our view, to come to any general conclusions on these points without considering the particular and detailed issues that would arise in relation to the proposed separation of a particular digital platform. It is often noted that both digital platform businesses and the markets in which they operate are very dynamic and that the boundaries between different types of economic activities, and the technologies which underpin them, are constantly shifting. Many of the assets, such as

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<sup>57</sup> Edelman (2011).

<sup>58</sup> Article 7(1) of Council Regulation 1/2003 of 16 December 2002 on the implementation of the rules on competition laid down in Articles [101] and [102] of the Treaty, O.J. [2003] L 1/1.

<sup>59</sup> See Economides (2001) for a discussion of the conditions to be met for structural separation to be justified.



data, are intangible and used for a wide range of business functions. This position is often contrasted with traditional utility or infrastructure industries, where the boundaries and the assets associated with different business activities remain relatively stable and relatively easier to specify. At the least, there is some risk of mis-specification which could impose significant additional costs or inefficiencies on the entities which emerge from the process. There is also the risk that the digital platform itself could exploit information asymmetries with competition authorities and allocate assets and people in a way which might frustrate the remedy or lead the affiliated businesses to withdraw from the market altogether if the remedy were imposed, with unintended consequences.

Our view is that the structural separation of digital platforms has a number of features which means it ought to remain a remedy of last resort, to be considered if and when the behavioural remedies which we discuss below are deemed to be ineffective or have otherwise been exhausted. This is also, broadly, the position which the European Commission seems to have adopted, at least for the time being.<sup>60</sup> Although there is currently a good deal of discussion in political circles about the 'break up' of some digital platforms, particularly in the US but also in Europe, we are some years away from seeing detailed or specific proposals to implement such a remedy. It is notable that the latest major studies on the application of competition policy to digital platforms have not advocated structural separation of the dominant digital platform as a primary remedy, either in relation to concerns about intermediation bias or in relation to other theories of harm. For example, Cremer et al. conclude:

"When it comes to digital platforms, it is less clear that the balance of costs and benefits argues for some version of unbundling of vertically integrated platforms. When compared to the traditional infrastructures (e.g. rail, energy networks), platforms differ as aspects of infrastructure provision and service provision may be mixed. While there may be cases in which full platform unbundling is called for, this remedy should not be the generalised answer to the finding of an abusive self-preferencing. Less restrictive ways to effectively preclude self-preferencing may exist."<sup>61</sup>

## 4.2. Regulation of factor-based mechanisms

If the source of the competitive distortion lies in the factors which the digital platform employs to filter, rank and display offers to consumers, then the obvious behavioural remedy to such concerns would involve a competition authority or regulator requiring the digital platform to implement changes with a view to eliminating the bias. These are, therefore, the first group of behavioural remedies which we consider.

Recently adopted rules impose more transparency on online intermediaries, reflecting a traditional view that 'sunlight is the best disinfectant' and that intermediaries will be deterred from engaging in intermediation bias if it were capable of being more readily detected.

Article 5 of the Platform to Business Regulation, which applies in B2B relationships, provides that:<sup>62</sup>

"1. Providers of online intermediation services shall set out in their terms and conditions the main parameters determining ranking and the reasons for the relative importance of those main parameters as opposed to other parameters.

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<sup>60</sup> <https://techcrunch.com/2019/03/11/dont-break-up-big-tech-regulate-data-access-says-eu-antitrust-chief/>

<sup>61</sup> Cremer et al, pp.67-68.

<sup>62</sup> Regulation 2019/1150 of the European Parliament and of the Council of 20 June 2019 on promoting fairness and transparency for business users of online intermediation services, OJ [2019] L 186/55.



2. Providers of online search engines shall set out the main parameters, which individually or collectively are most significant in determining ranking and the relative importance of those main parameters, by providing an easily and publicly available description, drafted in plain and intelligible language, on the online search engines of those providers. They shall keep that description up to date.

3. Where the main parameters include the possibility to influence ranking against any direct or indirect remuneration paid by business users or corporate website users to the respective provider, that provider shall also set out a description of those possibilities and of the effects of such remuneration on ranking in accordance with the requirements set out in paragraphs 1 and 2.

4. Where a provider of an online search engine has altered the ranking order in a specific case or delisted a particular website following a third party notification, the provider shall offer the possibility for the corporate website user to inspect the contents of the notification.”

Similar consumer protection rules, which apply in B2C relationships, now provide that:<sup>63</sup>

“the provider of online marketplace shall [...] provide the following information in a clear and comprehensible manner and in a way appropriate to the means of distance communication: (a) general information made available in a specific section of the online interface that is directly and easily accessible from the page where the offers are presented on the main parameters determining ranking [...] of offers presented to the consumer as result of the search query and the relative importance of those parameters as opposed to other parameters.”

There may be merit in ensuring that both consumers and businesses who use a digital platform are better informed about how it performs its intermediation function (and this may have some deterrent effect against overtly abusive conduct), although empirical research suggests that consumers do not engage easily with such information, understand what it means or find it easy to adjust their behaviour in response<sup>64</sup>. Plus, we have yet to see evidence of how these remedies are applied in practice or their consequences. We are not, however, persuaded that they will prove sufficient, in themselves, to address concerns about intermediation bias.

As explained in Section 2, the algorithms that perform the filtering and ranking functions in many digital platforms are both enormously complex and constantly evolving. Even if the digital platform was incentivised to fully disclose all of the factors that are employed, it is not clear to us that they could be described in terms which would be accessible to anything other than a small number of technical experts (likely employed by larger competitors). Moreover, even if they could be so described, the impact on the traffic generated and therefore on competition by each component part is extraordinarily difficult to determine in the abstract. Thus, even if a particular business were to observe that the volume of traffic it was receiving via the intermediation platform had fallen, it would be extremely difficult to attribute this to a particular factor or combination of factors, even if

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<sup>63</sup> New Article 6a of the Directive 2011/83 of the European Parliament and of the Council of 25 October 2011 on consumer rights, inserted by Directive 2019/... of the European Parliament and of the Council of XXX July 2019 as regards better enforcement and modernisation of EU consumer protection rules. Similarly, new Article 4a of the Directive 2005/29 of the European Parliament and of the Council of 11 May 2005 concerning unfair business-to-consumer commercial practices in the internal market.

<sup>64</sup> Hoppner and Davies cite a number of studies which suggest ‘transparency’ or disclosure remedies may be ineffective, e.g. <https://econsultancy.com/40-of-consumers-are-unaware-that-google-adwords-are-adverts/> and Hyman and Franklyn (2015).



it could be reasonably inferred from the circumstantial evidence that the algorithm was the source. We noted earlier that small, perhaps undetectable adjustments to very complex rules may each have a relatively trivial impact on the results which a consumer obtains in response to a particular query, but that the cumulative effect of a large number of such changes may nonetheless be competitively significant. Even assuming it could be done, it would then be necessary for an external body, such as a competition authority, to assess whether the changes which have been made have been motivated by a legitimate concern to produce better matches and more relevant results for consumers, or by anti-competitive motives.<sup>65</sup> It might be possible to establish this if the authority could obtain access to the internal documents of the platform,<sup>66</sup> but this would have to be done on an *ex post* basis following the receipt of a complaint.

There are a number of additional practical challenges to be addressed in relation to factor-based rules. The first is that digital platforms may face strong commercial incentives to withhold information about their decision rules and may have some justification in doing so. This is in part because the quality of matches is a key source of competitive differentiation between digital platforms that perform intermediation functions, and the algorithms therefore represent intellectual property of great commercial value. It is also because businesses which use the intermediation platform themselves have obvious incentives to optimise their performance on the platform and to improve their rankings. This can often be done by legitimate means, such as investing in beneficial improvement in their services or introducing new products or by bidding more for paid results, but it can also be done by 'gaming' the algorithm and investing in activities which, whilst they may improve the results the business obtains, may have few or no benefits for consumers or for the platform itself. The 'optimisation' industry (search engine optimisation, or SEO), to which we referred in Section 2, which has developed to advise businesses on how to improve their performance on digital platforms and increase their share of traffic, is evidence of the economic significance of such activities to the businesses concerned. Expenditure on SEO in the US is expected to be at almost \$80 billion by 2020.<sup>67</sup>

Digital platforms have incentives to discourage such activities since they may divert investment away from more beneficial activities whilst doing nothing to improve the quality of the matches which the platform returns or the value of the platform itself. The main way they do this is through the selective disclosure of the factors and rules they employ to rank results, and by making changes to those rules if they consider that their intent is being frustrated.<sup>68</sup> This means that the digital platforms and the optimisation industry are engaged in an arms race in which businesses are constantly seeking to reverse engineer the algorithms in order to understand how they might improve their performance.

This is (inevitably) a field on which there is little information in the public domain and so it is difficult for us (or, we suspect, a public authority) to assess with any confidence the potential gains and losses that might arise if the platforms were required to engage in greater disclosure of their algorithms than at present. Digital platforms may need to do more in the future to demonstrate the


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<sup>65</sup> As noted earlier (see Section 2.3), changes which are made for anti-competitive reasons may also, *ex post*, later produce results which are difficult to distinguish from those attributable to 'unbiased' actions.

<sup>66</sup> Internal documents proved quite significant in the Google Shopping case, see Case AT.39740, paras 381, 443, 456, 491. They were also considered in the UK Streetmap vs Google case, in which it was concluded that the intent of Google's changes to the Maps 'One Box' was to improve the quality of the Google SERP rather than to disadvantage rival mapping providers, see High Court, paras 79-80.

<sup>67</sup> <https://www.motocms.com/blog/wp-content/uploads/2018/11/spending-statistics.jpg>

<sup>68</sup> Google, for example, provides information on changes it makes to its search algorithms. See for example the blog post explaining the aim of controversial Panda algorithm in 2011, at <https://webmasters.googleblog.com/2011/05/more-guidance-on-building-high-quality.html>



relative costs and benefits of disclosure obligations.<sup>69</sup> However, there would appear to be a risk that requiring disclosure in order to remedy concerns about discrimination against particular businesses may, even if effective, have the unintended consequence of weakening incentives to invest in differentiating on quality and degrading the quality of matches obtained by consumers on the other side of the platform.

If requiring disclosure was not, in itself, sufficient to deter digital platforms from engaging in intermediation bias, then it would be necessary for the competition authority either to specify itself the factors which it requires the digital platform to implement, or to define the type of outcomes which they would be expected to yield.

### **Specifying the factors**

It might be possible for a competition authority to itself specify the factors, or at least to review those proposed by the platform, under circumstances in which the allocation rules were comparatively simple. This might be the case, for example, when the concern is that a digital platform is engaging in exclusionary conduct which involves excluding competitors from some parts of the platform altogether. Microsoft was found to be bundling its own applications with its Windows operating software but refused to incorporate or to display other competing media players or browsers. In the Google Shopping case, Google was found to be displaying results from its own vertical search engine in the Shopping Unit box at the top of the page but not the results of competing vertical search providers.<sup>70</sup>

In the former case, Microsoft initially proposed a remedy, which was subsequently adopted, that it would display five competing browsers on the desktop (after users had clicked through an introductory page which explained what browsers were) so as to give consumers a choice. A further seven options would be available if the user scrolled sideways.<sup>71</sup> The browsers were initially to be displayed in alphabetical order and in the same size and similar format in the ballot box, but this was subsequently changed so that they were displayed in random order. A similar remedy has been proposed by some parties in the Google Shopping case,<sup>72</sup> where it was proposed that Google would display a selection of specialised search widgets (including its own) in the Shopping Unit box at the top of the page. The widget that is chosen by the consumer would then become the default display inside the Shopping Unit for subsequent searches. Google itself initially proposed that it

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<sup>69</sup> Google offers an example in its recent submission to the ACCC Inquiry: "As just one example, Google's foundational ranking signal is PageRank, which treats a link to a webpage as a "vote" for the quality of that webpage. When Google Search launched in the late 1990s, PageRank's ability to understand site quality yielded significantly higher-quality search results. But webmasters began to try to game the PageRank signal by artificially trading or buying links, or even in some cases hacking third-party sites to place links to their own site. This behaviour had little correlation with the quality of the site's content, but PageRank had trouble telling the difference between honestly-placed "votes" and ones put in place solely to manipulate it. Google has therefore had to invest significant resources in detecting these sorts of link schemes. This specific example highlights that disclosure about how Google's algorithms work can enable webmasters to spend their resources aiming at the details of the algorithm, rather than at providing high quality content that users want", Google (2019) at <https://www.accc.gov.au/system/files/Google%20%28February%202019%29.PDF>, p.44.

<sup>70</sup> In addition, Google was found to have implemented changes to its organic search algorithms which demoted competing specialised search providers but not its own, which continued to be displayed prominently in the organic search results as well as in the Shopping Unit, Google Shopping, paras 345 et seq.

<sup>71</sup> The Microsoft Commitments ('Microsoft Commitments') are at [http://ec.europa.eu/competition/antitrust/cases/dec\\_docs/39530/39530\\_2671\\_3.pdf](http://ec.europa.eu/competition/antitrust/cases/dec_docs/39530/39530_2671_3.pdf)

<sup>72</sup> We understand that Google itself had initially proposed that the Shopping Unit include both results for Google Shopping and three links (rather than results), each of which would have directed the consumer to a rival shopping search engine provider, see Edleman and Lai (2013) 'Comments on Commitments in AT.39740 – Google' at <http://www.benedelman.org/publications/comment-edelman-lai-to-dqcomp-28may2013.pdf>



would display links to three rival specialised search providers in the Shopping Unit alongside the Google Shopping service results, with these links being drawn at random from a wider pool.<sup>73</sup> In both cases, a screening mechanism is first required to establish a pool of qualifying offers, and then a further mechanism is required to extract a sub-set of those offers and to determine the order in which they will be displayed.

These cases have a number of interesting features. One is that in both cases the presentation of options to consumers was required to be randomised. Mechanisms which require the presentation of options in a random order clearly have attractive properties when the concern is that a platform will otherwise systematically bias in favour of its own affiliated business. Rules which require the random allocation of resources (in our context, the attention of the consumer) have sometimes been favoured by policymakers as a means of addressing discrimination concerns. In the telecommunications sector, for example, networks have been required to queue and deliver data packets in an essentially randomised manner, which means without regard to the identity of the sender of the data or its properties. A vertically integrated network could not thereby promote its own data packets, or those of affiliated businesses, over those originated by third parties. Concerns about discrimination arose when telecommunications operators began to develop non-random allocation rules, or 'traffic management' capabilities which would have given them such possibility.<sup>74</sup> However, it should be obvious that 'random decision rules' will have limited applicability when the platform is performing a ranking function and that 'random ranking' is an oxymoron. The imposition of random allocation rules would only be applicable in circumstances where relevance is not a concern.

Another aspect is the need for quotas. The scarcity of resources – in these cases the display space inside the Shopping Unit or on the desktop or home screen – imposes constraints. The limitations of human attention and processing capability also mean that only a small number of options can be presented. Unless the platform is itself to engage in ranking, the competition authority will need to specify how many options should be presented and, if the number of potential suppliers exceeds the available 'slots', how those slots should be allocated. This is illustrated by the Microsoft case, where the Commission exercised its judgment (without, apparently, itself having undertaken any experiments to determine what the optimal number of choices might be or how consumers might react to alternative configurations):

"Displaying five web browsers in a prominent manner, and seven more when the user scrolls sideways, strikes an appropriate balance between the need to have a workable choice screen that users are likely to make use of and making the choice screen as accessible as possible to web browser vendors. If the choice screen presented too many web browsers, users could be overwhelmed and as a consequence would be more likely not to exercise a choice at all, but rather to dismiss the entire choice screen."<sup>75</sup>


There may also be questions about which firms would qualify as competitors and to whom slots might be allocated. Consumers will not want to be presented with, and platforms will not want to support, services alongside each other which perform fundamentally different functions, some of

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<sup>73</sup> The first set of Google Commitments ('First Google Commitments'), from 2013, are at [http://ec.europa.eu/competition/antitrust/cases/dec\\_docs/39740/39740\\_8608\\_5.pdf](http://ec.europa.eu/competition/antitrust/cases/dec_docs/39740/39740_8608_5.pdf)

<sup>74</sup> This is stylised presentation of the 'net neutrality' debate which has consumed policymakers in the telecommunications sector for many years and which was the precursor for the 'platform neutrality' debate. For more, see for example Federal Communications Commission (2010), 'Open Internet Order' at [https://docs.fcc.gov/public/attachments/FCC-10-201A1\\_Rcd.pdf](https://docs.fcc.gov/public/attachments/FCC-10-201A1_Rcd.pdf)

<sup>75</sup> Microsoft Commitments, para 81.



which may not be relevant. The authority will need to define the relevant market and the characteristics of firms that might qualify for consideration.<sup>76</sup>

Allocating slots may be particularly difficult in digital markets in which the competitive landscape can change quickly. Using the Microsoft browser example, a decision would need to be made about which browsers should be displayed in the ballot box and which excluded. As the browser market develops, the range of potential options or potential substitutes available to the consumer might be expected to change (under the Microsoft Commitments, the market shares used to determine the qualifying browsers were to be reviewed bi-annually). Unless the allocation rules are regularly revisited, there is a danger that the position of the incumbent suppliers would be entrenched by the remedy. Inclusion on this basis in the ballot box reflected current market share, which we might expect to favour existing providers with a large market share. That appears to have been the case with the Microsoft remedy.<sup>77</sup> In other words, a remedy which focuses on the narrow task of exposing the vertically integrated platform to more effective competition from existing businesses in the market may at the same time ossify the existing market structure and so make it less contestable in the future.<sup>78</sup> This suggests that rules which allocate scarce resources on the basis of quotas should be designed so as to ensure that the vertically integrated platform is exposed to competition both from existing rivals and potential entrants in the future. The allocation mechanisms need to be sufficiently flexible to allow today's incumbents to be replaced with new competitors in the future.

### *Defining outcomes*

In addition to being relevant to the design of remedies, quotas are likely to be involved when assessing their impact on competition in related markets. Competition authorities will likely need to have considered the impact of algorithms on competitive outcomes prior to any consideration of remedies in order to demonstrate an adverse competitive effect. As explained in Section 2, the complexity of these algorithms and the difficulty in distinguishing between those factors which may have virtuous effects and those which might have harmful effects, makes it very difficult to establish clear causation or to predict the outcome of any particular change simply by examining the source code. In the Google Shopping case, for example, the European Commission inferred the competitive impact of changes to the Panda ranking algorithm and exclusion of competitors from the Shopping Unit by observing changes in the rankings of rival vertical search services and the volume of traffic which they obtained over time, and inferring a causal relationship between these observations.<sup>79</sup> In this case, the Commission was also able to observe how traffic moved at different times in different Member States in response to common factors (as the changes to the algorithms were rolled out, chiefly in August 2011).<sup>80</sup> In the absence of such time series or cross-sectional data, evidence of bias has been inferred by comparing how different vertically integrated digital platforms rank affiliate businesses in response to the same query, with the assumption

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<sup>76</sup> The First Google Commitments proposed that Google would itself consider applications to join the 'Vertical Sites Pool' from which links would then be drawn to be displayed, with applicants being required to meet certain criteria which Google specified. These included, amongst other things, the functionality and purpose of the site, the product categories supported, a minimum traffic threshold and 'overall quality'.

<sup>77</sup> Microsoft (2019): 'User interaction with the IE choice screen in Europe confirmed that user selected the most recognized brand and not lesser known solutions', p.4 at <https://www.accc.gov.au/system/files/Microsoft%20%28February%202019%29.PDF>.

<sup>78</sup> Factor-based mechanisms may, in general, have these properties if the ranking criteria are biased towards historic performance rather than future potential. We understand, for example, that the Google AdWords (now Google Ads) algorithm considers both historic click through rates and predicts future performance when assigning an advert a quality score.

<sup>79</sup> Google Shopping, paras 464 et seq.

<sup>80</sup> Google Shopping, para 361.



being that similar results would reflect the influence of relevance or quality, whilst any observed bias towards affiliate businesses (relative to other platforms) would reflect the influence of affiliation.<sup>81</sup>

There may be both an *ex ante* and an *ex post* element to it. For example, a number of parties appear to have submitted evidence to the Commission during the market testing phase of previous remedy proposals in the Google Shopping case, which contains predictions about the impact the remedy might be expected to have. This is normally done by referring to the share of traffic which competing sites would be expected to obtain under different scenarios.<sup>82</sup> One such commentator observes:

“The rise of services like Usability Hub and Mechanical Turk has created a Moore’s Law for antitrust enforcers, overcoming the information asymmetries once inherent in negotiating with large consumer internet platforms. Absent the emergence of such tools, Google would be holding all of the cards. Instead, anyone with some basic technical knowledge can effectively look “under Google’s hood” with rapid, inexpensive, and accurate estimations of user behaviour.”<sup>83</sup>

However, we also think it is likely that competition authorities will need to undertake *ex post* assessments of remedies to determine their impact by observing their effect on the downstream market, similar to the assessments that were undertaken to establish evidence of an abuse. If the affiliated business continues to obtain preferential results or display in the vast majority of cases, with competitors being excluded or demoted in a similar proportion of cases, then the remedy is unlikely to be judged to be effective, even if arguments are presented to the effect that these outcomes are obtained entirely on the merits and that they represent the best matches for consumers. The question then becomes what data should be available to the competition authority in undertaking its assessment and whether there is a threshold or quota, implicit or explicit, at which the share of attention obtained by competitors (or some other measure) would be sufficient to dispel concerns about intermediation bias and sufficient to conclude that the remedy is satisfactorily resolving the competition concern.<sup>84</sup> It should be obvious that there is no clear *a priori* basis for determining the point at which an intermediation mechanism ceases to exhibit bias and authorities may be reluctant to suggest that they apply such quotas. Marsden (2008) cites comments by Commissioner Kroes on the day of the CFI Microsoft judgement in 2007:

“And we have complaints from those competitors, and so how can you measure ether things are working better. Well, a market share of much less than 95% would be a way of measuring - success. Now you cannot draw a line and say, well, exactly 50 is correct, but a significant drop in market share is what we would like to see.”

He notes: “*The Commissioner’s spokesman, Jonathan Todd, was quick to try to clarify that Commissioner Kroes meant that “once the illegal abuse has been removed and competitors are free to compete on the merits, the logical consequence of that would be to expect Microsoft’s market share to fall”.*<sup>85</sup> Similarly, in the Google Shopping case, Google itself is reported to have

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<sup>81</sup> See Wright (2011).

<sup>82</sup> It is unclear to us whether the Commission itself has undertaken such assessments. The Commission did engage a technical expert adviser to assess Google’s commitments proposals.

<sup>83</sup> Yelp, <https://blog.yelp.com/2019/03/5-years-later-google-raises-its-2014-european-settlement-proposal-from-the-dead> See also Hoppner and Davies (2013) citing studies by the Hamburg University of Applied Science predicting that 59% of consumers viewing the proposed remedy display for the Shopping Unit would click on Google links and only 4.9% on a rival link, p.11.

<sup>84</sup> See Kramer et al. (2017).

<sup>85</sup> Marsden, Philip (2008), pp.4-5.





made various efforts to increase the proportion of non-Google results that appeared in the Shopping Unit following the implementation of the remedy and data on changes in the share of traffic directed at Google, and non-Google businesses have been relied upon in arguments about the effectiveness of the remedy.<sup>86</sup>

Prescribing quotas is obviously difficult territory for a competition authority that is charged with restoring the competitive process rather than the position of particular competitors. As noted in Section 2, competition in downstream markets and dynamic efficiencies may be enhanced in the longer term if the digital platform takes steps to ensure that rivals are promoted a certain proportion of the time, but it may also mean that consumers are presented with less relevant results in the short term. Similar issues would arise, for example, if a remedy was to require consumers to be forced to periodically switch to other applications (e.g. a non-default browser). *Ex post* quotas are conceptually unattractive but we nonetheless suspect that *ex post* assessments may be practically necessary given the challenges which competition authorities face in predicting the impact of, or even in specifying in advance, changes to factor-based allocation mechanisms employed by digital platforms.

There may be a more acceptable role for quotas if remedies are intended to have some restorative purpose. In such a case, the remedy needs not only to ensure that downstream competitors can compete against the vertically integrated platform on the merits in the future, but also to deprive the digital platform of some of the commercial gains which could be attributed to the exercise of intermediation bias in the past. This is a difficult task and also one which might be better left to follow on damages actions in the courts rather than efforts to incorporate them into the design of the remedy. If it is attempted, then quotas might be used to ensure that competitors were able to recover a certain share of the traffic which they had been deprived when their services had been unfairly demoted. Such a remedy would likely need to be time limited, after which point further adjustments might be required to ensure that any further allocation of traffic was conducted wholly on the merits.

Our examination of factor-based remedies thus far has identified a significant number of challenges. At the heart of the issue is the need for a competition authority to be able to distinguish between those aspects of the mechanism which improve the quality of results for consumers, and those aspects which bias outcomes in favour of the vertically integrated platform. Demonstrating that an abuse has occurred requires the competition authority to establish (or at least infer) a credible causal link between the allocation rule employed by the platform and a particular set of market outcomes, but it may not enable the competition authority to specify the changes to the rule that would be required in order to remedy the distortion. To date, competition authorities have relied on the digital platforms themselves to propose remedies (the specification of the remedy in the Google Shopping decision consists of just two paragraphs) which they have then market-tested with third parties. These third parties have then undertaken various experiments, including exactly the kind of A/B testing which the digital platforms themselves are likely to have undertaken before proposing the remedy, to predict the impact of the remedy in question on the likely allocation of resources, as measured by the share of traffic that each party is

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<sup>86</sup> "Presumably, realising that it will never be possible to populate its new auction with enough genuine comparison shopping services to create even the veneer of a functioning remedy, Google has now set about populating it with fake ones instead[2]: Google has recently begun reaching out to Google Shopping Ad Agencies to encourage and incentivise them to pose as CSSs.", 'Open letter to Commissioner Vestager', 22 November 2018 at <http://www.searchneutrality.org/google/comparison-shopping-services-open-letter-to-commissioner-vestager>; Searchmetrics (2018) report that the share of non-Google results displayed in the Shopping Unit in the UK grew from under 1% in January 2018 to over 30% by December 2018. We understand the non-Google share may have increased further since then.



predicted to obtain. It is not very clear how competition authorities then determine that any particular remedy or any particular share of traffic is sufficient to address their concerns or the extent to which they have relied on such third party evidence in doing so, but a quota of some kind often seems, at least implicitly, to have been adopted.

A significant risk with factor-based regulation is therefore that ambiguity about what an unbiased outcome would look like provides opportunities for 'gaming' on the part of both the digital platform and its competitors. These activities themselves have a number of undesirable consequences. They include a tendency to delay the adoption and implementation of any form of remedy,<sup>87</sup> but also lead to ongoing disputes about their efficacy after they have been implemented. Competitors may feel that they might be able to obtain competitive advantages through the remedy process which they would not otherwise be able to obtain through actions in the market itself. The costs for consumers that arise from these activities are the same as those we identified earlier when discussing the role of search optimisation, and are a feature of many regulatory processes which affect the terms of competition between firms. In this case, we should also consider the costs incurred and resources required from the public authorities themselves in both specifying and then monitoring the implementation of factor-based remedies. This is something we return to in Section 5.

The challenges of designing factor-based decision rules which remove intermediation bias may lead authorities to wonder whether the easier remedy is simply to prohibit the practice or factor which is the object of concern. Such a remedy would clearly address the narrow non-discrimination objective but would at the same time deprive consumers of benefits (from vertical integration) to which we think competition authorities ought to have regard. In the first Microsoft case, for example, the requirement to offer Windows without any media player being pre-installed did not appear to prove very attractive to consumers, even though the narrow concern about preferencing Microsoft's own media player was addressed. In the Google Shopping case, a number of third parties have argued that the Shopping Unit should be abolished (and the Commission expressly indicated that this was a remedy it would consider), with Google returning to presenting all vertical search results alongside, and in the same format, as the rest of its organic search results. Again, this would remove concerns about intermediation bias within the Shopping Unit but might also deprive consumers of the benefits of graphics, ratings and other features of the Shopping Unit which consumers and competing vertical search providers appear to value (since they increase click-through rates). Similar to lines of business restrictions, prohibitions of practices which may yield consumer benefits do not appear an attractive approach for any competition authority to take, other than as a last resort.

### **4.3. Payment-based mechanisms**

We noted earlier that few, if any, of the allocation rules employed by digital platforms rely solely on prices. Most use 'hybrid' mechanisms that combine factor-based mechanisms to determine quality and relevance for the consumer alongside pricing rules. This means that businesses which may otherwise achieve performance by virtue of their quality or other factors can nonetheless improve their ranking in return for payment of a fee. It is also the primary means by which advertising-funded digital platforms derive their revenues.

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<sup>87</sup> The protracted nature of the remedies negotiations between Google and the European Commission in the Shopping case are well documented. They began in May 2012 and concluded with the publication of the decision in September 2017.



Payment-based mechanisms may be attractive for both platforms and businesses which use them, but they may also be attractive for competition authorities seeking to remedy concerns about bias. At first sight, using price signals as an allocation mechanism has many attractive properties. Payment-based mechanisms are used in many other contexts to allocate resources to those who value them most and who might therefore be expected to use them most efficiently. Prices are determined by the interaction of buyers (in our case there is a dominant seller) rather than through the intervention of a regulator or public authority or by the digital platform itself. Market mechanisms are also flexible (e.g. compared to quotas), which means that successful bidders can change over time and that entry is facilitated provided firms have the means to buy prominence. Pricing mechanisms may therefore promote contestability. Pricing mechanisms may also avoid a lot of the transaction costs associated with factor-based allocation mechanisms. Businesses may still spend money to optimise their bidding strategies, but opportunities to 'game' the remedies in an auction may be reduced (or at least be more transparent) relative to search optimisation.

That said, payment-based mechanisms will operate within a framework of rules which first have to be established and which will influence outcomes, and some *ex post* assessments as to the impact of those rules may still be necessary. They also present a number of challenges. The first, referred to in the introduction to this study, may be a concern that payment-based mechanisms may not produce good or relevant matches for consumers, since they will allow prominence to be determined by factors such as price. We explained in Section 2 that market mechanisms might also improve quality, because high quality businesses can ensure a high prominence on the platform through bidding. More prominence then induces scale effects, which increases the businesses' willingness to invest in even higher quality. Moreover, the incentives on the part of intermediary platforms to provide consumers on one side with relevant results and good matches, means that payment-based mechanisms are rarely, if ever, used other than in combination with factor-based mechanisms which are intended to ensure some degree of relevance and quality. We also noted that current and proposed transparency rules often require digital platforms to disclose to consumers whether the results that are presented are influenced by payments between businesses and the platform.

We also noted in Section 2 that if digital platforms obtain income from the allocation of resources then this may introduce incentives to divert an even greater proportion of those resources (in our context the attention of consumers) towards payment-based mechanisms and away from factor-based mechanisms. A digital platform might have incentives to invest in its paid search capabilities and to allow the quality of its organic search to degrade, or to allocate more space on the web page to displaying paid search results and less to the display of organic results. The effect of this would then be to channel more businesses towards paid search, increasing revenues for the digital platform. Such actions might not be discriminatory (assuming that the degradation in organic search performance affected all businesses, including the affiliate business of the digital platform, in the same way),<sup>88</sup> but their impact on the quality of matches obtained by consumers is far from clear at this stage.<sup>89</sup>

In our view, the balance between the use of factor-based and payment-based mechanisms by a digital platform is unlikely to be something on which a competition authority would wish to form a

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<sup>88</sup> The finding in the Google Shopping case was that the introduction of the Panda algorithm did not affect all vertical search engines in the same way, since the algorithm was not used to produce results for Google's own shopping service but only for those of its competitors.

<sup>89</sup> As noted in Section 2.3, intermediation bias may allow poorer quality affiliate businesses to obtain scale effects and improve their quality (and hence their ranking in organic results). However, it may have the opposite effect for other businesses, and the organic search service may itself produce poorer results for consumers, irrespective of quality. The overall consequences for consumers are extremely complex and largely unexplored to date.



firm view, given that the impact on consumer welfare is in any event difficult to assess.<sup>90</sup> The greater concern is that market mechanisms, whilst allowing businesses to compete for prominence on non-discriminatory terms, allow the digital platform to extract 'excessive' rents by virtue of its dominant position in the upstream market.<sup>91</sup> This is another instance where too narrow a focus on the need to eliminate bias may lead us to ignore other considerations which do not fall directly within the discrimination theory of harm but which may nonetheless be very undesirable.

A further challenge to the application of payment-based mechanisms in allocating scarce resources between the affiliate interests of a vertically integrated platform and third parties is what is often characterised as the 'wooden dollars' problem. That is, in the absence of structural separation, the bids for prominence that are made by the affiliate will take the form of accounting transfers or 'wooden dollars' which pass from one part of the digital platform to another, whereas the payments made by third parties represent real costs. The affiliate business therefore faces a different set of constraints and incentives from those of its third party rivals which are likely to give it a significant advantage in any auction.<sup>92</sup>

This issue has long been recognised by those seeking to regulate vertically integrated firms, particularly in the liberalised utility sectors. The conventional approach is first to require the firm to implement separate accounting arrangements which mimic the arm's length transactions between structurally separated businesses and which also allow the regulator to track the revenues and costs associated with the activities of the downstream business. In order to ensure that comparably efficient competitors can bid effectively against the affiliate business, the regulator would apply a 'margin squeeze' test to ensure that the costs deemed to be incurred by the affiliate business are such as to allow an equally efficient rival with similar revenues to earn a sustainable economic margin on its activities. If the affiliate business were deemed to incur costs that exceeded its revenues minus a reasonable margin, then it would be deemed to have engaged in a 'margin squeeze'. Often, the concern is that the input costs that are established by the dominant upstream business will be too high, relative to the revenues that are available in the downstream market. The position is different in the context of this study, however, as the input costs will be determined by the bids that are placed by the (non-dominant) affiliated business in the downstream market, and the competition for user attention occurs on the (upstream) platform itself.

Margin squeeze tests may address the 'wooden dollars' challenge but they can themselves involve significant implementation challenges.<sup>93</sup> Differing views will exist about what constitutes a reasonable economic margin for the provider of a particular service, and the extent to which adjustments should be made to account for differences in efficiency. If the margin is set at a level which allows inefficient firms to sustain their operations, then consumers are likely to be harmed and the remedy is likely to dampen competition. If, on the other hand, the margin is set at a level which reflects the efficiencies obtained by the affiliate business, perhaps as a result of previous

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<sup>90</sup> It is unclear whether the proportion of traffic (as well as the absolute volume) generated by paid results is growing whilst that generated by organic search is falling, see <https://moz.com/blog/google-organic-clicks-shifting-to-paid>, <https://www.ppcresellers.com/blog/9-pay-per-click-ppc-statistics-2016/> and <https://www.zerolimitweb.com/organic-vs-ppc-2019-ctr-results-best-practices/> for differing perspectives.

<sup>91</sup> Such claims may be even more difficult to assess if the prices paid for prominence on the platform are set by the bidding behaviour of the businesses themselves in an auction.

<sup>92</sup> The platform may face an opportunity cost in the form of foregone revenues from third party bids if their inability to outbid the affiliate deters them from bidding or participating in the auction, although bidding by the affiliate might also be used to induce others to bid more and to spend more 'real dollars'.

<sup>93</sup> We understand that some form of margin squeeze assessment has been undertaken – at least informally – by the Commission in its assessment of the Google Shopping remedy.



abusive conduct or as a result of having access to data or other assets held by the dominant platform, then it may be impossible for competitors to match it. Similar debates often arise in relation to the scope of test and the services or products to be included, and the time periods over which revenues and costs should be accounted for.<sup>94</sup> In the case of an affiliate business that bids for paid search results, for example, these considerations might take the form of whether the margin squeeze test should apply on a bid-by-bid basis or to bidding in the aggregate over a particular time period. Questions might also arise about whether revenues and costs relating to the display of results in one format (such as the Shopping Unit or another dedicated display on the web page) should be considered in isolation, or whether activities across all paid formats would be a better basis. The answers to these and other questions will depend on the specific facts of the case and on the objectives of the particular remedy that is being contemplated.

An interesting example is the bidding arrangements for the Google Shopping remedy.<sup>95</sup> In that case, specialised shopping search services compete with each other on one side of the market to list merchants who can fulfil consumers' interest in particular types of products. They compete on the basis of the fees which merchants pay when a consumer clicks through the specialised search engine and lands on the relevant web page on the merchant's website. These merchant fees represent the revenues which specialised search engines derive from their activities. On the other side, specialised search providers are, under the remedy implemented in the Google Shopping case, required to bid to have their results displayed inside the Shopping Unit. These bids, which are only payable if the consumer subsequently clicks through, represent the costs which specialised search providers, including Google's own Shopping service, incur in order to generate the clicks on the merchant website for which they receive revenues. Our understanding is that, at least initially, Google proposed a rule that its own affiliated Shopping service would never bid more than 80% of the corresponding merchant fee when bidding for slots on the Shopping Unit.<sup>96</sup> In effect, Google was proposing that a reasonable variable margin for the purposes of a margin squeeze test in this context would be 20% of revenues earned, on a bid-by-bid basis. Any competing third party Shopping service provider could be confident that it would be able to outbid Google's affiliated business provided it were prepared to accept a margin of less than 20% of associated revenues and provided that it could be profitable whilst bidding on this basis. In this case, the implementation and oversight of a margin squeeze rule is greatly assisted by the fact that revenues and costs are both triggered only if the consumer clicks through to the merchant site. Matching revenues and costs may be more complex in other circumstances.<sup>97</sup>

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<sup>94</sup> For an introduction see OECD (2009).

<sup>95</sup> We note reports that Google may be proposing to adopt a payment-based model to address concerns arising from the European Commission's Android case. Under the proposals, third party search providers would bid to be one of the three providers included in the choice screen (alongside Google search) which purchasers of a new Android device would see when the device was first booted up. The selected search provider would then become the default search engine on the home screen box and in the Chrome browser and payment of the bid would be made each time that provider is selected, see 'Google will charge search providers to be the Android default in Europe' at <https://www.theverge.com/2019/8/2/20751353/google-auction-android-search-choice-screen>

<sup>96</sup> 'Open Letter to Commissioner Vestager'. The position is made more complex by the fact that Google also introduced a (temporary) incentive scheme for merchants who spent more than €10,000/month with non-Google specialist search providers. This allowed these non-Google providers (some of whom were new entrants) to lower their fees to merchants whilst bidding more in the auction. Critics argue that Google introduced this scheme in March 2018 in order to increase the share gained by non-Google providers whilst the remedy was subject to scrutiny by the European Commission, see Raff and Raff (2018).

<sup>97</sup> Programmatic advertising services offer many more complex fee arrangements, such that merchants may specify what they wish to pay per click (CPC), per conversion or acquisition (CPA), a target return on ad spend (ROAS) or other objectives, see <https://www.wordstream.com/blog/ws/2018/12/19/google-ads-automated-bidding>



Critics have so far tended to emphasise the more fundamental concern about excessive returns for the dominant platform rather than with the mechanics of how payment-based mechanisms might be made to work better in practice.<sup>98</sup> A potential concern with such arrangements is that disclosing, *ex ante*, the margin squeeze rules that the digital platform itself operates will allow its competitors to bid just above the affiliate in the knowledge that they will be unable to match them without breaching the rule.<sup>99</sup> Lower costs for competitors may, however, be an attractive outcome in this particular context, given concerns that exist about excessive prices. Merchants may also benefit under these arrangements unless the effect of the margin squeeze rule is to lead the affiliate to increase its merchant fees and other specialised search providers follow suit. However, if other specialised search providers do not follow suit, then merchants should be able to ensure that they are displayed in the Shopping Unit without themselves incurring higher costs and likely by incurring lower ones if competitors are prepared to earn a lower margin than Google.<sup>100</sup>

Payment-based mechanisms are generally assumed to work if participants have an equal opportunity to participate in the market process, such that there is no reason to expect that the outcomes would be biased in favour of any particular actor other than those who value the resources the most. As we have already seen, however, the position is often not so simple and competition authorities will tend to have certain outcomes at least implicitly in their minds. Sometimes, this may involve a restorative dimension, which means that the outcome of the bidding process needs to provide some recompense for past abuses. Sometimes, it simply involves ensuring that third parties obtain a certain quota of the resources that are at issue and adjusting the rules if they do not.

There are many ways in which payment-based mechanisms, and in particular the auctions which are generally employed by digital platforms when selling advertising or paid search opportunities, could be designed so as to achieve particular outcomes. However, this could present a challenge for competition authorities who are considering remedies that have been proposed by the digital platforms themselves, since those platforms will have tested how the auction design performs and may be able to hide features which contribute towards biased outcomes. In this sense, they have some of the same features as factor remedies, which are also likely to have been subject to rigorous testing by the platform before being proposed and which may also contain hidden biases which are difficult to detect. In the same way, there is significant independent and academic expertise available to businesses and to public authorities when it comes to the design and testing of auction formats, so as to predict the outcomes they might be expected to produce.<sup>101</sup> Payment-based rules are likely to be more transparent than factor-based ones (since they are less likely to

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<sup>98</sup> Critics have tended to focus on the 'wooden dollars' concern: "*Google's commitment to a notional 20% "profit" margin imposes an artificial limit on Google Shopping's otherwise unlimited ability to outbid its rivals—but this is equally meaningless. While this promise can create a narrow opening for competing CSSs to sometimes bid their way onto the page, it does nothing to address the inescapable and transformative inequality between bids that cost Google nothing and bids that cost competitors their incentive and ability to innovate and grow.*", 'Open letter to Commissioner Vestager'.

<sup>99</sup> There could also be concerns that the Google affiliate might be able to engage in strategic bidding in the auction to force up prices paid by its rivals, although we think these are likely to be less of a concern in this particular context and could be tested by the Commission. The criticism of the Google Shopping remedy implementation by some firms has been that Google has been subsidising competing bidders.

<sup>100</sup> Searchmetrics (2018) suggests CPC for merchants using specialised search has fallen since the remedy was introduced, p.4.

<sup>101</sup> Google specified the auction process in the First Google Commitments. It consists of a second-price auction, with a reserve price. Bidders are informed in advance about the size of the pool in which they can bid to participate (those participating being providers who Google has determined to provide relevant results in response to particular search terms). Three links would then be drawn at random from the pool and displayed in the Shopping Unit in response to any individual query.



involve commercially-sensitive intellectual property or to be a source of competitive differentiation), but they can be equally complex and unpredictable.

Also, as with algorithms, authorities may find themselves needing to assess the impact of an auction on competition in the downstream market on an *ex post* basis, and may require adjustments to the auction design if it appears that it is yielding results which mean that third parties account for a very low share of the prominent results. This may then introduce some of the same challenges and the risk of gaming by various parties that we identified in relation to factor-based remedies (we referred earlier to changes in the outcomes of the Google Shopping remedy, some of which appear to have been influenced by Google itself in the period since it was first implemented in September 2017). In other words, if competitors know that the competition authority will assess the effectiveness of the remedy by reference to the outcome of auctions that are conducted, they may have incentives to behave strategically in those auctions (in the extreme by boycotting them) in an effort to persuade the competition authority that the remedy should be abandoned or that further adjustments in their favour should be made. Similarly, the dominant digital platform may have incentives to adjust their bids so as to produce outcomes which appear more favourable to rivals whilst the arrangements are subject to scrutiny, but which they may revise after it has receded.

Authorities might also give consideration to features which they might require to be incorporated into the auction design, such as bidding quotas, bidding credits or other measures which might be required to restore competition in a market that was previously subject to intermediation bias. Again, these are features which would depend on the particular facts of the case.

#### **4.4. Conclusions on remedies for intermediation bias**

In this part of the study, we have discussed the two main types of behavioural remedy which we believe would generally be considered when seeking to remove intermediation bias by a vertically integrated digital platform. Other potential remedies, such as requiring the vertically integrated platform to cease providing the services which give rise to concerns, or structurally separating the platform so as to remove any incentive to discriminate, may address the narrow issue but have other features which make them unattractive and mean they should only be considered as remedies of last resort.

We describe the two categories as 'factor-based remedies' and 'payment-based remedies', with the former generally involving adjustments to ranking algorithms so as to remove components which are deemed to produce biased results and the latter generally involving the use of auctions and prices to inform the ranking of results (often alongside factor-based mechanisms which are intended to ensure that the results remain relevant to the consumer and are of sufficient quality). Both of these types of remedy involve significant challenges for competition authorities. In particular, it will often be extremely difficult to predict *ex ante* whether the remedy will eliminate bias or what the outcome will be for competition in the relevant downstream market. In both cases, competition authorities may require external assistance from data scientists or auction specialists, provided there is sufficient disclosure on the part of the platforms to allow them to engage in experimentation and trials. Both the digital platforms themselves and third parties may have strong incentives to attempt to game the process and exploit information asymmetries between the industry and the authorities. *Ex post* assessment may therefore also be required, but the issue may then arise as to how a competition authority would assess when its concerns had been adequately remedied and whether it was in fact adopting a quota, at least implicitly, in order to do so. Further difficulties arise with factor-based mechanisms when assessing outcomes *ex ante*, because there is a need to distinguish between outcomes which reflect the merits or relevance of



the services and those which may reflect the exercise of bias on the part of the intermediary. The differences between the two can be subtle and the effects can be cumulative. The issue is not resolved by relying upon payment-based mechanisms, since almost every such mechanism will also be moderated by factor-based mechanisms which preserve quality and ensure relevance.

We do not offer firm conclusions as to which of the types of remedy is best suited to addressing concerns about intermediation bias, since the answer is likely to depend on the specific facts of the case. We note that payment-based mechanisms, such as those adopted in the Google Shopping case, have been criticised by businesses who say they would prefer a factor-based ranking mechanism such as the organic search algorithm to determine what is displayed in the Shopping Unit or alongside other organic search results.<sup>102</sup> We understand why some businesses might prefer to avoid the costs of bidding for prominence and to rely upon organic search instead, particularly if that had been their position in the past.<sup>103</sup> However, it is not clear that competition authorities ought or would, as a matter of law, be able to prescribe the business models or the architecture and design of the landing pages which digital platforms employ, or that consumers' interests would necessarily be best served by their doing so. We consider that payment-based remedies have a number of significant advantages over factor-based mechanisms as a remedy for intermediation bias.

We are, however, clear that public authorities should devote more attention to considering the issues which we have identified in this part of the study. We would echo Economides and Lianos who, having studied the Microsoft case, concluded that:

"it is important to think seriously about potential remedies before litigation begins."<sup>104</sup>

It is not clear to us that competition authorities such as the European Commission or the US Federal Trade Commission (FTC) have yet to take this advice sufficiently seriously.<sup>105</sup> The remedies adopted in the Microsoft cases have been widely criticised for being ineffective.<sup>106</sup> The remedies adopted in the Google Shopping case have also been criticised extensively, although this may reflect the extensive market testing that was undertaken by the Commission on several occasions and the incentives of the various interested parties to try to game the process. Nonetheless, we think there are lessons to be learned and have sought to present them in this report.

Our discussion has, however, also raised a further question, which we turn to in the final part of this report. This is the question of whether competition authorities are currently well placed to engage with the appraisal, design or monitoring of highly complex behavioural remedies of the kind

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<sup>102</sup> "The harsh reality is that a pay-for-placement auction is fundamentally incompatible with the concept of comparison shopping (or, indeed, any other form of vertical search)", Open Letter to Commissioner Vestager, op cit; see also Raff and Raff (2017).

<sup>103</sup> A similar situation arose in the debate about 'paid prioritisation' by telecommunications networks. In that case, any payment-based mechanism was expressly prohibited by regulators both in Europe and the US (although this prohibition was subsequently repealed in the US).

<sup>104</sup> Economides and Lianos (2010).

<sup>105</sup> A number of the studies referred to in the introduction of this study propose that 'fair trading' or non-discrimination rules should be developed by a new regulatory body rather than as remedies to be applied under competition law. See e.g. Scott Morton et al. p. 93 and p.96; Furman et al. p.61 and p.64, proposing a rule that 'dominant' digital platforms ensure business users are "provided with prominence, rankings and reviews on designated platforms on a fair, consistent, and transparent basis" and that "The code of conduct then sets out in more detail a range of behaviours that are inconsistent with this principle. These include a platform with strategic market status giving undue preferential prominence on its webpages to its own integrated services. These details in the code of conduct were agreed through a participative approach with the industry, and are well understood by affected parties as a result." This report is intended to highlight some of the challenges which those charged with developing such a code may face.

<sup>106</sup> Economides and Lianos (2010); Sanad (2014); Marsden (2008).





that we have described in the previous section. One of the common characteristics of both types of remedy is their complexity, but another is that tests and experimentation may be required to predict their impact and effectiveness *ex ante*, and that observation and analysis may be required to assess their impact *ex post*. The current adversarial environment under which competition litigation is conducted may not be conducive to such activities.<sup>107</sup> In the next section, we consider whether alternative institutional arrangements might be better suited to the task.

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<sup>107</sup> A similar point was already made in Larouche (2000).

05

**THE ROLE OF  
EXPERIMENTATION IN  
DESIGNING AND  
POLICING REMEDIES**



## 5. The role of experimentation in designing and policing remedies

Our discussion so far has highlighted that designing remedies to address intermediation bias is both complex and highly case-specific. We have also explained how remedies may have undesirable side effects or are likely to be undermined or circumvented in practice. A factor-based remedy (such as prohibiting the use of certain criteria for the ranking of businesses on the platform) could be nullified, or at least substantially undermined by other or subsequent changes to the intermediation process which may, on their face, have beneficial consequences for consumers. The interaction between factor-based mechanisms and payment-based mechanisms is also highly complex. There are numerous ways in which biased intermediation can be effected, including in subtle ways such as exploiting behavioural biases or through the cumulative effect of changes which are each so small as to be almost impossible to detect. Without access to the results of the platform's own experimentation on the various mechanisms (both algorithms and auctions) or to the internal documents accompanying them, the effect of intermediation bias is difficult for anyone other than the platform itself to quantify *ex ante*. As we have seen, in these circumstances, the competition authorities will often find themselves relying upon predictions from interested parties, all of whom have their own incentives to game the process and bias the outcome.

The challenge is compounded by the fact that competition authorities and regulators are currently likely to lack the technical expertise and capabilities themselves to police and supervise such intermediation mechanisms directly. Even if a specialist 'digital platforms agency' was established in the future – as some studies now propose – it will be a challenge to keep pace with changes in intermediation technologies, such as artificial intelligence and big data, and the speed at which these are implemented in factor-based mechanisms. The temptation in these circumstances will be for public authorities to ignore the substantive or technical aspects of any remedy and resort to subjective measures, such as *ex post* quotas on how much traffic is observed to be reallocated between different businesses, in order to determine whether they should be judged to be effective. This would be an unsatisfactory position to end up in, for the reasons explained in Section 4 of this report.

When remedies for intermediation bias are proposed by the digital platforms themselves, as has been the case to date, then competent authorities can be certain that every such proposal is the result of a rigorous internal experimentation process to test its impact. Without the ability to demand access to the resources required to test the experimental outcomes of these remedies, and possibly alternative design proposals, competent authorities will always face a significant information asymmetry *vis-a-vis* the digital platforms.

While it may seem convenient – and may be legally necessary – to leave the details of the implementation of remedies to the platform itself, public authorities should, in our view, require access to the same information as the platform relied upon when selecting a specific implementation from the set of possible options. This should include information about the other options, the tests that were run on each, and the results. The competent authority's powers in relation to remedy design should, in other words, be no different from their powers in relation to all the company's internal documents which they exercise when establishing an abuse. Authorities should also have and use a right to propose (small) changes to the rules and to require that experiments be conducted to verify their effect. In some cases, competent authorities might have



their own staff directly involved in the experimental process, as some financial services regulators do when assessing the performance and compliance of new financial products.<sup>108</sup>

Such arrangements would also give the dominant platform the means to advance objective arguments based on the same experimental data, in order to refute requests that may have an impact beyond those intended by the remedy or which may otherwise be harmful for consumers. It would allow them to pro-actively test allocation rules with authorities under safe harbour arrangements, which would protect both the digital platforms and the authorities. Potential conflicts could be resolved *ex-ante*, with much less effort than in a given *ex-post* investigation, avoiding costly fines and follow-up investigations in the process.

These benefits have already been recognised in other fields and have produced initiatives which NESTA, a UK innovation foundation, refers to as ‘anticipatory regulation’,<sup>109</sup> arguing:

“When regulators have to take on new functions for which they lack an established playbook, or need to deal with uncertain market developments, a flexible, iterative learning approach is needed rather than a ‘solve-and-leave’ mentality. Where regulations are being developed for a new area or introduce substantial changes, it is difficult to know exactly what the impacts will be. Utilising a more experimental, trial and error approach, at least at the beginning, rather than immediately creating definitive rules can help build evidence on what works to achieve the desired outcomes. Standards, testbeds/sandboxes or exhorting best practice are different ways in which regulators can provide more flexible interventions.”<sup>110</sup>

We think experiments could be conducted – even in the most complex environments – which, if done correctly, would allow competent authorities to make more confident causal claims about the impact of remedial changes to intermediation mechanisms. Such experiments would offer authorities, as well as the platform and competitors, objective data and scientific answers. This would contribute to ensuring the effectiveness of the legal system for plaintiffs, while providing legal certainty and objectivity for defendants. There is significant third party expertise in academia and elsewhere in both data science and auction design to assist in the undertaking of such work, but there are as yet no institutional arrangements or frameworks to enable such experiments to be undertaken within the context of a competition law enquiry.

Although we consider these strong arguments to allow and encourage competent authorities to engage with digital platforms in experimentation when assessing remedies to intermediation bias (and perhaps for other types of remedies as well), this does not mean that such practices would be without challenges.

First, experimentation would give public authorities access to business-critical insights that they would not expect to obtain in the normal course of a competition investigation. In particular, competent authorities would gain access to data not only about past performances and outcomes, based on actual implementations and design choices made, but also data about the potential impact of implementation and design choices that had yet to be deployed, all of which would be very commercially sensitive. It may then be difficult for an authority to disclose sufficient information to explain to third parties why a particular form of remedy was adopted and others were not. On the other hand, competent authorities are already accustomed to dealing with

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<sup>108</sup> The idea of ‘regulatory sandboxes’ and test beds has already been developed by some financial services regulators, see for example UK Financial Conduct Authority at <https://www.fca.org.uk/firms/regulatory-sandbox>

<sup>109</sup> <https://www.nesta.org.uk/feature/innovation-methods/anticipatory-regulation/>

<sup>110</sup> Armstrong et al. (2019), p.27.



challenges of this sort, and financial services regulators and others seem able to engage in similar activities without such concerns arising.<sup>111</sup>

Second, whilst experiments are well suited to test the impact of incremental changes, they are usually not well suited to test the impact of more fundamental changes. This is because it is essential that the treatment condition be identical to the baseline condition in every detail, except for the feature that has been changed. Only then is it possible to make a causal inference that the differences that have been observed between the treatment condition and the baseline condition must be due to the implemented change, rather than being correlated to some other factor or combination of factors. If the change is so significant that the treatment condition and the baseline condition are not really comparable anymore, then experiments will not yield reliable outcomes, as subjects undergo a learning process to adapt, or are aware that they are part of an experiment.

Third, on a related note, experimentation can only be informative based on the status quo at the time of testing. This is a challenge if a competent authority is seeking to restore market conditions to those that prevailed prior to the abuse occurring. Indeed, the time period between the abuse and the consideration of the remedy may be many years, during which the relevant markets will have changed, often quite significantly in the case of digital ones.

Fourth, we should recognise that experiments are not without costs to firms, although dominant platforms will likely already have the necessary infrastructure to conduct experiments in place and will do so on a regular basis. Nevertheless, an experiment will, by definition, usually have an impact on market outcome and therefore imply an opportunity cost for firms. The number of experiments that can be run at a given time is likely to be limited and thus there may also be an opportunity cost with respect to the speed at which a platform can innovate and run alternative experiments, unrelated to the remedy. Again, we do not believe that this argument has much weight, since experiments on digital platforms can be undertaken very efficiently. Firms do so themselves very frequently and the costs imposed are the consequence of prior unlawful activity, and may in any event be lower than those that would otherwise be imposed through fines or subsequent investigations. Nonetheless, authorities should be aware of the costs that experiments impose, and should use their powers cautiously and selectively. In particular, while authorities should be entitled to obtain experimental results on changes that have been suggested to a remedy that has initially been proposed by the platform, more radical, own design proposals to be tested must be considered very carefully and should not expand beyond the narrow scope of the investigation. Firms might be given rights to appeal to an adjudicator if they felt that was not the case.

Having considered the case for experimentation in remedy design when addressing intermediation bias, a question arises as to whether this function would be best undertaken by the competition authority or by another agency, such as a new digital authority (DA) or another existing regulatory authority. Scott-Morton et al. note:

“Requiring a dominant bottleneck to abide by a non-discrimination rule could induce competitive entry by allowing complementary businesses to thrive and eventually become horizontal competitors to the bottleneck.<sup>112</sup> The ongoing monitoring necessary to enforce this type of remedy in a specific antitrust case is not an ideal role for an antitrust agency. However, if the antitrust agency determines that such a remedy run by the DA would restore

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<sup>111</sup> No mention of this is made in FCA (2017).

<sup>112</sup> See Section III.2.B.3.E.



and protect competition, the law would allow it the option of requesting the DA to carry out the remedy. A speedy mechanism to adjudicate complaints would be key.”<sup>113</sup>

More work is required before the precise institutional and legal arrangements could be decided upon. As Scott-Morton et al. suggest, the traditional boundaries between *ex post* and *ex ante* functions may become less clear in the future. Remedies which are applied *ex post* (following the establishment of an abuse) may need to be assessed both before and after they are implemented. We do not see a case for establishing a new agency for the sole purpose of undertaking experiments with digital platforms in order to devise remedies to competition cases, but new institutional arrangements are likely to be required.<sup>114</sup>

For competition authorities, this will require significant changes in their *modus operandi*. Whatever the approach, existing institutional arrangements and modes of working are unlikely to result in the effective remedy of intermediation bias or good outcomes for consumers.

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<sup>113</sup> Scott-Morton et al. (2019), p.96. For arguments as to why a new digital authority is not required at this stage, at least in relation to issues such as intermediation bias which can be addressed by means of existing competition law, see Kadar (2015).

<sup>114</sup> In Italy, for example, some aspects of digital platform regulation are being undertaken by the telecommunications regulator, AGCOM, working in co-operation with the competition authority, see <https://www.agcom.it/documents/10179/10875949/Allegato+4-9-2018/f9befcb1-4706-4daa-ad38-c0d767add5fd?version=1.0>

06

# CONCLUSIONS





## 6. Conclusions

We consider that remedies for intermediation bias have been under-researched to date and that competition authorities have a rather mixed record when trying to implement them. The central challenge arises from the fact that practices such as ranking search results and giving prominence to some matches rather than others is an essential function of digital platforms that engage in intermediation. Simply prohibiting such practices or imposing the kinds of *ex ante* rules that have been adopted to police the conduct of traditional vertically integrated networks will not be appropriate.

Instead, competent authorities will need to determine whether an observed set of outcomes represents a legitimate attempt by the platform to present the best matches to users, or whether it reflects the exercise of bias which is likely to distort competition and harm consumers. In order to remedy such bias, authorities will need to understand the source of the bias in algorithms which can use hundreds of discrete factors to generate results and which can involve thousands of small adjustments being made every year.

In approaching this task, we think it is useful to distinguish between 'factor-based' and 'payment-based' ranking mechanisms, whilst recognising that most payment-based mechanisms also use factors to ensure relevance is maintained. We conclude that vertically integrated digital platforms may engage in intermediation bias under either type of mechanism and that both present challenges, some of which are similar and some of which are different, when it comes to detecting and remedying intermediation bias. We conclude that competent authorities ought to remain agnostic about the type of intermediation mechanisms digital platforms employ and that payment-based mechanisms may have a useful role to play.

When assessing remedies for intermediation bias, we think there is a risk that public authorities will depend on the predictions of the platform itself or of competitors, both of whom may have the technical resources to conduct experiments which the public authorities themselves may lack and both of whom have incentives to game the process. Alternatively, public authorities may simply benchmark changes in competitive conditions in the downstream market in order to infer whether or not the source of bias has been removed without attempting to fully understand how or why the changes they observe have occurred.

We conclude that the authorities ought to take a more pro-active role in formulating remedies for intermediation bias than competition authorities appear willing to have done in the past. It should involve engaging directly with platforms in the conduct of experiments which would assess the impact on downstream markets of changes to factors (in factor-based mechanisms) or changes to auction design (in payment-based mechanisms). This could include the authority directing that particular experiments be conducted, as well as that authority having the same degree of access to the data and results of experiments as to other internal documents of the company when seeking to establish an abuse. We consider that the 'sandboxes' and other collaborative modes of regulation that are now being developed by financial services regulators and others may provide relevant insights for those engaged in remedying intermediation bias.

We recognise that some questions still remain, such as whether the approach to remedies we propose should best be undertaken by the existing competition authority as a specialist digital agency or another existing regulatory body. There is also a question as to the changes to the legal framework that would be required in order to implement the measures we propose, and an important debate as to whether *ex ante* rules which aimed to prohibit intermediation bias could





supplement the kinds of *ex post* interventions which we consider in this report. These are all issues that we think merit further research.



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Centre on Regulation in Europe

📍 Avenue Louise, 475 (box 10)  
1050 Brussels, Belgium

📞 +32 2 230 83 60

✉ info@cerre.eu

🌐 cerre.eu

🐦 @CERRE\_ThinkTank